Risk and Resilience in U.S. Military Families

Shelley MacDermid Wadsworth
David Riggs
Editors

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Editors
Shelley MacDermid Wadsworth
Department of Child Development
and Family Studies
Purdue University
47907 West Lafayette, Indiana
USA
shelley@purdue.edu

David Riggs
Department of Medical and Clinical
Psychology
Uniformed Services University
of the Health Sciences
20814-4799 Bethesda, Maryland
USA
driggs@usuhs.mil

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To military families everywhere
and those who serve them

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Contributors

Hoda Badr, Ph.D., is an assistant professor and health psychologist in the Department of Oncological Sciences at the Mount Sinai School of Medicine in New York. Dr. Badr's research seeks to identify the mechanisms by which marital interactions affect health and well-being and to develop programs to target those mechanisms and promote couple adjustment. Toward this end, Dr. Badr holds grants funded by the National Cancer Institute and the U.S. Department of Defense to examine the links between marital processes and the psychosocial and physical adjustment of patients and their partners across the cancer spectrum, including those coping with pre-cancerous conditions, as well as newly diagnosed and advanced cancers.

Trina M. Barker, M.Ed., received her B.S. in Psychology from the University of Oregon and her M.Ed. in community counseling from The Citadel. She started her career as a case manager for the mentally ill in Charleston, South Carolina, and continued as a registered counselor in Bremerton, Washington, while her husband was in the United States Navy. She has worked as a research coordinator at the University of Texas M.D. Anderson Cancer Center on studies assessing the use of expressive writing support groups for individuals coping with colon and rectal cancer and an observational study of the effects of spousal communication on cognitive processing and adjustment in couples coping with head and neck cancer.

William R. Beardslee, M.D., is a member of the FOCUS team, is the Gardner/Monks Professor of Child Psychiatry at Harvard Medical School, and Director of the Baer Prevention Initiatives, Department of Psychiatry, Children's Hospital Boston. His primary interests are in the prevention of depression in families and in enhancing resilience in those undergoing adverse circumstances. He is the author of over 150 articles and book chapters and of the recent book, *When a Parent Is Depressed: How to Protect Your Children from the Effects of Depression in the Family*, which describes his approach to preventing depression in families.

Rebecca K. Blais received her bachelor's degree in psychology in 2004 at Connecticut College. She earned a M.S. in the clinical psychology program at the University of Utah and is currently a doctoral student in that program under the mentorship of Keith D. Renshaw, Ph.D. Her primary program of research focuses

on attributions for psychological symptoms, stigma, and other barriers to seeking informal and formal support, in the context of mood and anxiety disorders. She has also co-authored publications on PTSD, obsessive-compulsive disorder, and the effects of D-9-tetrahydrocannabinol on human functioning.

Robert M. Bray, Ph.D., is a senior research psychologist and director of the Substance Abuse Epidemiology and Military Behavioral Health Research Program at RTI International. His research interests focus on the epidemiology of substance use and other health behaviors in military and civilian populations with an emphasis on understanding the prevalence, causes, correlates, and consequences of these behaviors. He has directed nine comprehensive worldwide Department of Defense Surveys of Health Related Behaviors Among Active Duty Military Personnel that comprise the most widely cited data on substance use and health behaviors in the military.

Rachel M. Burns, M.P.H., is a research assistant at the RAND Corporation (Pittsburgh, PA) and primarily works within the Center for Military Health Policy Research. She earned her MPH degree in Epidemiology from the University of Michigan School of Public Health. Her work focuses on the epidemiology of suicide and suicide prevention, combat-related traumatic brain injury among military members and veterans, and the impact of deployment on the well-being of children and families of military members.

Catherine M. Caska earned a B.A. in psychology at Syracuse University and a M.S. in clinical psychology from the University of Utah, where she is currently in her third year of a clinical psychology Ph.D. program. Catherine currently studies under the mentorships of Dr. Timothy Smith (University of Utah) and Dr. Keith Renshaw (George Mason University). Her research interests focus broadly on the interpersonal dynamics of mood and anxiety disorders, with a particular emphasis on the effects of combat-related PTSD on military service members, their spouses, and the health of both partners.

Casey Cocker earned her masters of arts in marriage and family therapy from Western Michigan University where she participated in research on collaborative health care. She is a doctoral student in child development and family studies with a focus on marriage and family therapy at Purdue University. Currently, she is a marriage and family therapist intern at Horizon Oncology Center. Casey is involved in research on couple functioning with chronic illness and in observational research on child–parent attachment relationships.

John S. Crown is a statistician with the RAND Corporation.

Anita Chandra, Dr. P.H., is a behavioral scientist at the RAND Corporation (Arlington, VA), with training in public health (Johns Hopkins Bloomberg School of Public Health). She has a background in child and adolescent health and community-based participatory research and evaluation. Throughout her career, Dr. Chandra has been engaged in working with community partners to expand our understanding of the needs of children and families and to improve youth and

family programs. At RAND, she leads projects examining the impact of deployment on military families as well as studies in child mental health, community resilience, and school health.

Julie Clark is a mental health epidemiologist at the Walter Reed Army Institute of Research. She received her M.S. from Portland State University in 2004 in applied social psychology. She is interested in soldier and spouse family functioning and mental health outcomes as well as resilience to stress.

Monique Clinton-Sherrod, Ph.D., is a research psychologist at RTI International. She received her Ph.D. in social psychology from Wayne State University with a focus on the impact of child maltreatment and other psychosocial factors on adult sexual violence experiences. Her expertise includes the areas of intimate partner violence, childhood maltreatment, substance abuse prevention, and women's and minorities' health, with particular focus on the evaluation of effectiveness of interventions at both systemic and individual levels.

Stephen J. Cozza, M.D., is professor of psychiatry at the Uniformed Services University where he serves as associate director, Center for the Study of Traumatic Stress. Dr. Cozza's professional interests have been in the areas of clinical and community response to trauma and the impact of deployment and combat injury, illness, and death on military service members, their families, and their children. Dr. Cozza serves as a scientific advisor to several national organizations that focus on the needs of military children and families. He is the principal investigator on several congressionally funded grants focusing on military child neglect and the effects of parental combat injury.

Ashley N. Doane, M.S., is a doctoral candidate in applied experimental psychology in the Department of Psychology at Old Dominion University. She has examined the interrelationship between substance abuse and intimate partner violence, the effects of family violence on college students' dating relationships, the role of children in women's attendance and compliance in an outpatient substance abuse program, and cyberbullying behaviors in college students. Her primary research interest is on identifying different forms of cyberbullying and the antecedents of cyberbullying.

Christopher R. Erbes, Ph.D., is an assistant professor of psychiatry at the University of Minnesota Medical School, a clinical psychologist, and the program coordinator of the Minneapolis VA Medical Center's Posttraumatic Stress Recovery Team. His research interests include risk and resilience factors for long-term adjustment following trauma exposure, and he is particularly interested on contextual factors that can influence individual courses of adjustment following trauma exposure. Along with Drs. Melissa Polusny and Paul Arbisi, he coleads the Readiness and Resilience in National Guard Soldiers (RINGS) studies that utilize longitudinal methodologies to explore individual and environmental predictors of functioning in National Guard soldiers.

Deborah A. Gibbs, M.S.P.H., is a senior policy analyst and deputy director of the Women, Children and Families Program at RTI International. Her research includes studies of patterns of child maltreatment and violence against women, particularly in military populations, as well as programs and policies designed to prevent or mitigate these problems. She currently leads a study of the cooccurrence of spouse abuse, child abuse, and substance abuse among Army families.

Jennifer M. Guimond, Ph.D., is a research assistant professor in the Department of Psychiatry at the Uniformed Services University of the Health Sciences in Bethesda, Maryland. She conducts research in the Child and Family Program of the Center for the Study of Traumatic Stress, an interdisciplinary center with an established international reputation for research, education, and consultation on the effects of terrorism, bioterrorism, trauma, disasters, and war on individuals, communities, and groups. Her research interests include family disruption and trauma related to combat deployment and injury, traumatic grief, child maltreatment, and sexual behavior problems in children.

Jennifer L. Hardison Walters, MSW, is a research analyst at RTI International. She received her MSW at the University of North Carolina at Chapel Hill School of Social Work and has research experience in the areas of intimate partner violence, sexual assault, cooccurring family violence and substance abuse, prisoner reentry, and juvenile screening and assessment instruments. Prior to joining RTI, she worked with a statewide child welfare initiative and as a victim advocate providing direct services to victims of domestic violence and sexual assault.

Richard E. Heyman, Ph.D., is a research professor of psychology in the Department of Psychology at Stony Brook University, State University of New York. He received a B.S. from Duke University and a Ph.D. from the University of Oregon. He has received 30 grants/contracts from major U.S. funding agencies on a variety of family topics, from anger escalation in couples to the impact of family violence on children to community-level prevention of family maltreatment, substance problems, and suicidality. Dr. Heyman has published over 80 scientific articles/chapters focused on couple dysfunction, partner abuse, and child maltreatment.

James Hosek, Ph.D., focuses his research on national security manpower in the areas of recruiting, retention, compensation, deployment, personnel quality, and science and engineering. He is the director of the Forces and Resources Policy Center of the National Defense Research Institute at RAND, editor-in-chief of *The RAND Journal of Economics*, and professor of economics at the Pardee RAND Graduate School. He received his Ph.D. in economics from University of Chicago.

Jamie Howard, Ph.D., is a postdoctoral fellow on the *Strength At Home* staff at the National Center for PTSD, Behavioral Science Division, Boston VA. Her clinical and research interests are in the effects of PTSD on family functioning, particularly parent–child and intimate partner interactions. She received her doctorate in clinical psychology from Northwestern University and completed her internship at The Boston Consortium in clinical psychology, focusing on assessment and treatment of trauma in both children and OEF/OIF veterans.

Lisa H. Jaycox, Ph.D., is a senior behavioral scientist at RAND (Arlington, VA) and a clinical psychologist (University of Pennsylvania, 1993). Dr. Jaycox has combined clinical and research expertise in the area of mental health and behavioral reactions to a wide variety of traumatic life events, and interventions used to alleviate them. Her recent work centers on interventions for middle school students exposed to trauma, evaluation of programs designed for young children exposed to violence, care for teen depression in primary care settings, and the impact of war on service members and their families.

Ruby E. Johnson, Statistics and Epidemiology, Social Sciences Division, RTI International, Research Triangle Park, NC, USA.

Benjamin Karney is a professor of social psychology at the University of California, Los Angeles, and an adjunct behavioral scientist at the RAND Corporation. His research focuses on how marriages can be hurt or helped by the contexts in which they take place. He has been the director and principal investigator of the Florida Project on Newlywed Marriage, a series of longitudinal studies of the first years of marriage and currently codirects the UCLA Relationship Institute. He has twice received the National Council on Family Relation's Reuben Hill Research and Theory Award for outstanding contributions to family science.

Michelle L. Kelley, Ph.D., is a developmental psychologist and professor in the Department of Psychology at Old Dominion University. She has conducted research on the impact of deployment on military personnel, their spouses, and their children. Her research interests include the effects of military-induced separation in traditional and nontraditional military families, and traditional ship-based as well as Individual Augmented deployments, and associations between deployment and mental health, substance use, and parenting.

Marian E. Lane, Ph.D., is a research psychologist trained in industrial/organizational psychology with 7 years of experience designing research studies and survey instruments, collecting data, and performing quantitative and qualitative data analysis. Her primary areas of expertise include survey research, multivariate statistics, focus group interviews, and organizational assessment. She has 5 years of experience working with military personnel, with an emphasis on recruiting and retention. Dr. Lane has authored articles for peer-reviewed journals, presentations for national and international conferences, and briefings to senior military and civilian leaders.

Gregory A. Leskin, Ph.D., is the assistant director for FOCUS at the UCLA Semel Institute for Neuroscience and Human Behavior. Dr. Leskin coordinates the National Child Traumatic Stress Network's Military Families Learning Community. Prior to joining UCLA, Dr. Leskin worked as a clinical researcher at the National Center for PTSD/VA Palo Alto. Dr. Leskin has developed clinical programs and training curriculum for USMC, U.S. Navy, U.S. Army, and Department of Veterans Affairs on a number of topics, including screening, assessment and treatment for PTSD and TBI, as well as psychological health and resilience for military and veteran families.

Patricia Lester, M.D., is the medical director of the Child and Family Trauma Psychiatry Service at the UCLA Semel Institute. Her work is dedicated to the development, evaluation, and dissemination of family-centered prevention and treatment for families facing the impact of serious medical illness, traumatic events, and parental loss. She codeveloped the FOCUS intervention, and currently, is the director of the BUMED implementation of FOCUS. She has served as a consultant for the United States Marine Corps, Zero to Three Coming Together Around Military Children Advisory Panel, and the Uniformed Armed Services University Center for Traumatic Stress.

Nancy I. Longoria earned a masters in education degree in counseling, family, and human services, marriage and family therapy specialization from the University of Oregon in 2005. Nancy worked for over 10 years at Oregon Research Institute, where she had primary responsibility for training observers to use the LIFE (Living in Familial Environments) coding system to record family interactional behavior in real time. She is currently enrolled in a doctoral program in child development and family studies at Purdue University, where she conducts observational research on child–parent attachment relationships and intervention research involving families with young children.

Ting Lu earned a masters degree in child development and family studies from Purdue University in 2009. She is currently pursuing her doctoral degree at Purdue University. Her research interests include the development of children's attachment relationship, child–parent discourse, and children's socioemotional development. At present, she coordinates a longitudinal study on child–mother attachment relationships during the preschool years.

Shelley MacDermid Wadsworth, M.B.A., M.S., Ph.D., is a professor in the Department of Child Development and Family Studies at Purdue University, where she also directs the Military Family Research Institute and the Center for Families. Her research focuses on relationships between job conditions and family life. Dr. MacDermid Wadsworth is a fellow of the National Council on Family Relations. Dr. MacDermid Wadsworth served as the civilian cochair of the DoD Task Force on Mental Health, and currently, serves on the Psychological Health External Advisory Committee of the Defense Health Board and the Returning Veterans Committee of the Institute of Medicine.

Sandra L. Martin, Ph.D., is an epidemiologist and a professor and associate chair for research in the Department of Maternal and Child Health. She is also associate dean for research at the UNC Gillings School of Global Public Health. Dr. Martin's research, teaching, and public health service focuses on the health of women and children, with particular attention paid to the role that violence plays in their lives. She also teaches graduate-level courses on research and mentors graduate students studying violence against women.

Paco Martorell, Ph.D., focuses his research on a variety of areas including the economics of education, labor economics, and national security manpower. He is the principal investigator on a federal grant to study the labor market effects of

military service among disadvantaged youth. He is also professor of econometrics at the Pardee RAND Graduate School. He received his Ph.D. from the University of California, Berkeley.

Elizabeth Mazur, Ph.D., received her Ph.D. in developmental psychology from the University of Michigan and is presently an associate professor of psychology at Pennsylvania State University, Greater Allegheny. Her research interests center around relationships, including stress and coping within the family context, especially with regard to physical disability and to parenting, and adolescent social interaction on the internet.

Kathrin Milbury, Ph.D., is a social psychologist and a postdoctoral fellow at the University of Texas M. D. Anderson Cancer Center. Funded by the American Cancer Society, Dr. Milbury's research seeks to demonstrate that (1) the emotional state of cancer patients and their spouses influences their ability to provide and receive effective spousal support, and (2) the quality of the support influences the processing of cancer-related information. This project will lay the groundwork for Dr. Milbury's future goals of developing intervention programs helping couples to effectively support each other to improve coping and adjustment to cancer.

Catherine Mogil, Psy.D., is the director of training and intervention development for FOCUS at the UCLA Semel Institute for Neuroscience and Human Behavior. She is the codirector of the UCLA Child and Family Trauma Psychiatry Service. She is also a consultant to the National Military Family Association Operation Purple Family Retreats. Dr. Mogil received her doctorate from Pepperdine University and completed her internship at UCLA. Dr. Mogil completed a postdoctoral fellowship specializing in the prevention and treatment of child and family traumatic stress at USC/Children's Hospital Los Angeles.

Candice M. Monson, Ph.D., is one of the foremost experts on intimate relationship functioning and PTSD and the use of conjoint therapy in treating traumatic stress reactions. She is an associate professor and director of clinical training at Ryerson University in Toronto, Ontario. Dr. Monson has served as deputy director of the Women's Health Sciences Division of the VA National Center for PTSD. Her primary research focus is on the development, testing, and dissemination of treatments for PTSD. Dr. Monson has coauthored *Cognitive Processing Therapy: Veteran/Military Version* and is the primary developer of Cognitive-Behavioral Conjoint Therapy for PTSD.

Capt. (Ret.) William Nash, M.D., is a researcher, educator, author, and senior policy consultant in the field of combat and operational stress control (COSC) for the U.S. military. Before retiring at the end of 30 years of active duty as a Navy psychiatrist, Dr. Nash led the development and implementation of the current COSC doctrine in the Marine Corps and Navy, focusing on reducing stigma and enhancing both resilience and recovery. Dr. Nash authored a number of articles and book chapters, coedited the recent volume, *Combat Stress Injury*: *Theory*, *Research*, *and Management*, and still serves as a principal or associate investigator on a number of research and pilot projects.

Col. (Ret.) John Nelson, Ph.D., is a senior research scientist at SUNY Stony Brook. He brings particular expertise in areas of military family policy and quality of life. He served the U.S. Air Force for 29 years in a wide variety of roles, including clinician, teacher, administrator, staffer, and leader and across a wide variety of settings from installation to Office of the Secretary of Defense. His current work is focused on community prevention initiatives. He has coauthored numerous articles on enhancing community capacity in the military. He received a Ph.D. in social work from the University of Minnesota.

Blair Paley, Ph.D., is an associate clinical professor in the Department of Psychiatry and Biobehavioral Sciences at the David Geffen School of Medicine at UCLA. She serves as a consultant for FOCUS, assisting in the development of training materials for the FOCUS program, as well as the translation of FOCUS services into a web-based format. Dr. Paley's research and clinical work is focused on prevention and intervention with high-risk children and their families. She is currently the principal investigator on an NIAAA-funded study to implement and evaluate a multicomponent intervention for infants and toddlers with prenatal alcohol exposure in foster care.

Matthew R. Pearson, M.S., is a doctoral candidate in applied experimental psychology in the Department of Psychology at Old Dominion University. His research interests span health, social, developmental, and industrial/organizational psychology. His primary focus is in the application of advanced quantitative methods to the study of risky behaviors among college students, antecedents and consequences of prejudice/discrimination, dual process models of cognition, and ecological momentary assessment techniques.

Germán Posada, Ph.D., is an associate professor in the department of Child Development and Family Studies, at Purdue University. His research interests include the development of child–parent attachment relationships in infancy and childhood, the influence of family processes on those relationships, and the links between the family's ecology and attachment relationships outcomes.

Keith D. Renshaw earned a Ph.D., in clinical psychology at the University of North Carolina at Chapel Hill under the mentorship of Dianne Chambless. He was an assistant professor at the University of Utah for 4 years until moving to George Mason University, where he is currently an assistant professor in the psychology department. His research focuses on interpersonal aspects of anxiety and mood, studied from a cognitive-behavioral framework. Although he has published research on obsessive-compulsive disorder, panic disorder, and depression, his primary emphasis is on the effects of deployments and combat-related PTSD on military service members and families.

David S. Riggs, Ph.D., is an executive director of the Center for Deployment Psychology. His work has focused on trauma, violence, and anxiety with a particular interest in the impact of PTSD and other anxiety disorders on the families of those directly affected. He has trained numerous student and mental health professionals from the United States and other countries in techniques for treating PTSD, OCD,

and other anxiety disorders. As the director of the Center for Deployment Psychology, Dr. Riggs oversees training of behavioral health professionals to prepare them to provide for the needs of deployed service members and their families.

Lyndon A. Riviere is a research psychologist in the Department of Military Psychiatry at the Walter Reed Army Institute of Research. He is the principal investigator of the Land Combat Study II protocol, "Impact of deployment and combat experiences on the mental health and well-being of military service members and their families," which will survey soldiers and spouses throughout the deployment cycle for 5 years (2008–2013). He has an undergraduate degree in social studies, and an M.A. and Ph.D. in sociology. His research interests include National Guard soldiers, military families, and the influence of social factors on mental health.

William Saltzman, Ph.D., Dr. Saltzman is a clinical psychologist and the associate director of FOCUS at the UCLA Semel Institute for Neuroscience and Human Behavior. For the past 18 years, Dr. Saltzman has developed and implemented trauma and loss-focused programs for children and families contending with disaster, war, community violence, and medical trauma. Dr. Saltzman codeveloped FOCUS and has consulted extensively with military families and military service providers. Dr. Saltzman is a professor of counseling at California State University, Long Beach, and is on staff with the UCLA Child and Family Trauma Psychiatry Service and the UCLA National Center for Child Traumatic Stress.

Amy M. Smith Slep, Ph.D., is a research associate professor of psychology in the Department of Psychology at Stony Brook University, State University of New York. She completed her undergraduate degree from the University of Delaware and her Ph.D. in clinical psychology from SUNY Stony Brook. She is the principal or coprincipal investigator on 29 grants/contracts from major U.S. funding agencies. Dr. Slep has published widely on parenting problems, family violence, and prevention.

James L. Spira, Ph.D., is a clinical and research psychologist, with specialty training in health psychology, epidemiology, and military medicine. Dr. Spira has worked with military medicine since 1996 as the head of the Division of Health Psychology at Naval Medical Center San Diego, chair of four congressionally directed medical research program review panels, and recipient of several DoD grants to study prevention and treatment of combat-related stress on service members and their families.

Casey Taft, Ph.D., is a staff psychologist at the National Center for PTSD in the VA Boston Healthcare System and associate professor of psychiatry at Boston University School of Medicine. Dr. Taft was the 2006 Chaim Danieli Young Professional Award winner from the International Society for Traumatic Stress Studies and the 2009 Linda Saltzman Memorial Intimate Partner Violence Researcher Award winner from the Institute on Violence, Abuse, and Trauma. Dr. Taft currently serves as principal investigator on grants focusing on understanding and preventing partner violence through NIMH, Department of Veterans Affairs, Centers for Disease Control, and Department of Defense.

Terri Tanielian, M.A., is a senior social research analyst at the RAND Corporation (Arlington, VA) where she also serves as the codirector of RAND's Center for Military Health Policy Research. Ms. Tanielian's areas of interest include the psychological and behavioral impact of combat, terrorism and disasters, public health emergency preparedness, and risk communication. She recently led the RAND study Invisible Wounds of War and is now coleading a landmark study to assess family readiness across the deployment cycle. She has published several peer-reviewed articles and book chapters as well as served on numerous working groups and expert panels.

Sherry M. Walling, Ph.D., is an assistant professor of psychology at Fresno Pacific University and a licensed clinical psychologist in the state of California. Her research interests include posttraumatic stress disorder and family violence, risk and protective factors for PTSD, and the role of spirituality in coping with trauma. She completed her doctoral work at Fuller Graduate School of Psychology in Pasadena, CA, a predoctoral fellowship at Yale University School of Medicine, and a postdoctoral fellowship at the National Center for PTSD, VA Boston Healthcare System. She is currently a practicing clinician at Link Care Center in Fresno, CA.

Elaine Willerton, Ph.D., is a senior research associate at the Military Family Research Institute at Purdue University. Her research interests center on families and health. Her training as a marriage and family therapist has influenced her desire to design research that is relevant and practical for families. Dr. Willerton has worked collaboratively in medical settings as a behavioral scientist, training physicians, supporting patients, and studying the associations between mental and physical health and family relationships.

Kirsten Woodward, LCSW, is the family programs director for the Wounded Ill and Injured Support Directorate, Navy Bureau of Medicine and Surgery, Washington, DC. Her primary responsibilities involve the management, oversight, and collaboration of all Navy medicine family resilience programming to include Project FOCUS. Along with her primary programs, Ms. Woodward is a subject matter expert in the field of clinical social work with an emphasis on PTSD and family trauma. She has designed and developed many programs in a consulting capacity for the DoD and was an active member of the Pentagon's Operation Solace team.

Chapter 1
Introduction: Military Families under Stress: What We Know and What We Need to Know

Elaine Willerton, Shelley MacDermid Wadsworth, and David Riggs

Abstract This volume is the product of an invited symposium of scholars studying issues relevant to military families. The impetus for organizing the symposium and producing this volume was the belief that together we could teach one another and then strategize about the most pressing issues facing military families. Beyond that, we wanted to stimulate multidisciplinary scholarly discussion in order to deepen our mutual understanding of military families and generate strategies for the pressing challenges they face. We intentionally cast a wide net. Represented at the symposium were leading military and civilian scholars from family studies, child development, medicine, marriage and family therapy, and psychology. This chapter outlines how far we have come in our knowledge of issues related to military families and the areas in greatest need of attention as the war continues to place heavy demands on service members. In line with the symposium, this volume focuses on four aspects of military family life: marital and family functioning, parenting and child outcomes, family sequelae of wounds and injuries, and single service members. In this chapter we preview each of the chapters in the volume and summarize the recommendations of symposium attendees regarding the most urgent needs for future research and training.

At the time of writing, the United States is engaged in the most prolonged period of large-scale deployments in decades. About two million service members have been deployed to Iraq or Afghanistan. Over 5,000 have died and somewhere between 36,000 (Department of Defense, 2010) and 52,000 (Powers, 2010) have been injured. Millions of spouses, children, parents, siblings, and others have experienced the deployment of someone in their family to hazardous overseas duty. President Obama, Vice President Biden, and their wives have all publicly acknowledged the sacrifices of military families and their commitment to ensuring they

E. Willerton (✉)
Military Family Research Institute, Purdue University, West Lafayette, IN, USA
e-mail: willerton@purdue.edu

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receive adequate support. The Bidens' commitment is both personal and political, as their own son Beau serves in the military and completed a deployment to Iraq.

War-related separations challenge families in many ways, both positive and negative. Lengthy separations test the personal, social, and economic coping resources of families at home. The worry and uncertainty associated with combat deployments provoke anxiety. Numerous studies of the current conflict have noted that significant proportions of service members returning from deployment struggle with symptoms of psychological health problems (Smith et al., 2008; Tanielian & Jaycox, 2008; Milliken, Auchterlonie, & Hoge, 2007). Service members and their spouses also are concerned about their intimate relationships, during both deployment (Mental Health Advisory Team (MHAT) VI, 2009) and the months following return (Bliese, Wright, Adler, Thomas, & Hoge, 2007). A growing number of studies have established the impact and consequences of deployment and reintegration for family members of military service men and women (Chandra et al., 2010; Faber, Willerton, Clymer, MacDermid, & Weiss, 2008; Renshaw, Rodrigues, & Jones, 2008).

Thanks to medical advances, many service members who previously would have died of their injuries are returning from the conflicts to live long, though sometimes altered, lives. They and their families must adjust to living with the sequelae of their physical and/or psychological wounds. At levels unprecedented in recent memory, families with members serving in the National Guard and Reserves are now sharing these experiences. In response, the Department of Defense has substantially expanded its efforts to support service members and families before, during, and after deployment regardless of where they are located. These support efforts focus on medical care, mental health care, preventive education, and logistical support.

Understanding the needs of military families and how best to help them is a complex challenge, which is what prompted the Military Family Research Institute at Purdue University and the Center for Deployment Psychology to invite leading scholars to gather to discuss cutting-edge research and the most pressing needs for future research and training. This volume contains the products of the symposium – both the presentations made and the results of the subsequent discussions. Our impetus for this effort was the belief that it is important for researchers to have opportunities to engage in scholarly discussion and debate about the insights and challenges emerging from cutting-edge scientific knowledge. Beyond that, we also wanted to disseminate this information to try to assist others who share our commitment to understanding and helping military families. We intentionally cast a wide net when selecting scholars for the symposium, reaching out to both civilian and military scholars from family studies, child development, sociology, economics, medicine, marriage and family therapy, and psychology. In addition, we invited military policy makers who design and implement programs that affect the quality of life for families. Together, these experts brought a diverse and deep well of knowledge to their discussions.

The symposium focused on four topics: marital functioning, parenting and child outcomes, family sequelae of wounds and injuries, and single service members. Each session consisted of several research presentations, followed by structured

breakout discussions and reports back to the entire group. During each discussion, we asked attendees to consider two questions: First, "What are the most urgent research needs related to military families, and why?" and second, "What findings from recent research related to military families are most important to include in the training of military members and those who serve them, and why?" Answers to the latter question have informed the refinement of the trainings conducted by the Center for Deployment Psychology for military and civilian providers who serve military families. Simply put, we wanted to learn what the most recent research was telling us about military families, and how those research findings could be used to develop new research priorities, improve training for those who help military families, and ultimately make support efforts more successful.

The ideas exchanged by the thoughtful and energetic scholars at the symposium yielded a showcase of cutting-edge information. In this chapter we provide readers with an overview of each chapter and the scholars' recommendations for future research and for training. We use as an organizing framework the same four major areas of military family life that guided the organization of the symposium: marital and family functioning, parenting and child outcomes, family sequelae of wounds and injuries, and single service members.

Priorities for Research on Military Families

Over the last century, scholarly interest in U.S. military families has ebbed and flowed with the scope of military operations. Bursts of research, sometimes prolonged, are especially evident following World War II (Hill, 1949) and the Vietnam conflict (Figley & McCubbin, 1983). In the 1990s, research was associated with peacekeeping operations around the world (Schumm, Bell, & Gade, 2000) and to a lesser extent with the first Gulf War (Jensen, Martin, & Watanabe, 1996; Schumm, Hemesath, Bell, Palmer-Johnson, & Elig, 1996). Although studies of military families associated with Operations Iraqi Freedom and Enduring Freedom have only recently begun to appear in the scientific press (e.g., Huebner, Mancini, Wilcox, Grass, & Grass, 2007; Castaneda et al., 2008; Faber et al., 2008; Warner, Appenzeller, Warner, & Grieger, 2009), many studies are underway (Institute of Medicine, 2010).

Methodological Considerations

The seasoned scholars gathered for the symposium identified several priorities for future research. First, more extensive "mining" of existing data and records is desirable. Tapping into these data sources could provide important information without imposing the burden of additional interviews and surveys on military members and their families. When it is possible to invest time and resources into studies of

service members and their families, investigators should aim to conduct longitudinal research that will produce information about the processes that operate within families over time. Toward that end, the scholars at the symposium acknowledged the importance of using analytic techniques that effectively examine families as systems, as opposed to focusing only on individuals or even dyads. Research on military families is important for understanding and supporting them, but it also provides useful opportunities to learn about vulnerability and resilience because military families are subjected to frequent demands for adaptability, but are also selected and trained to be ready to exercise that skill. Thus, researchers must pay close attention not just to vulnerability and pathological outcomes, but also resilience, growth, and healthy adaptation.

Populations Needing Increased Attention

Symposium attendees agreed that there are several populations within the military who deserve greater attention in future research and programming for prevention and intervention. Children of military members are a population of prime interest because of concerns about the impact of parental deployments on children and parent/child relationships (Chartrand & Siegel, 2007). There is no lack of interest in studying this vulnerable population, but the logistical and regulatory hurdles can be substantial. The largest gap in knowledge regarding military children pertains to children aged 0–5, although there are gaps in knowledge about military children at all developmental stages from birth through adolescence. Research on parent/child relationships is also important to pursue, especially the relationships between military mothers and their children. Because women are such a minority in the military, relatively little is known about these relationships.

Single service members are a diverse population within the military in terms of age, history of intimate relationships, and other personal characteristics. They also comprise a large group – almost half of the total force. What is sometimes overlooked, however, is that single soldiers, despite not being married, have families, intimate relationships, and needs that may be distinct from other segments of the military population. They are also a diverse population, comprising both never-married and previously married service members. Specific issues about which there are gaps in knowledge include the needs and concerns of service members' support networks, including parents, siblings, and others and their intimate partners – especially important in times of war when these network members may be called upon to care for a service member who has been wounded or injured. Another needed area of focus is the experiences of single parents within the military.

Finally, symposium attendees agreed that members of several other population subgroups deserve greater attention. The first is members of the National Guard and Reserves, who have been heavily utilized in the Operation Enduring Freedom/Operation Iraqi Freedom (OEF/OIF) conflicts, and are unique in that they live and work in civilian communities when not deployed. They also have been shown to be

at higher risk for psychological health problems following return from deployment. Another important group is service members who deploy with a unit other than the unit to which they are permanently assigned in order to fill manpower shortages, or individual augmentees. Deploying with a different unit can make it difficult for individual augmentees to experience the unit cohesion that has been recognized to be so important for service members to adapt to deployment. It can also be difficult for individual augmentee families to receive services when they are so far away from the headquarters of the deploying unit. Families with diverse structures, such as stepfamilies, extended families, or other less traditional structures should be recognized and included in research, training, and services. Gay service members face unique circumstances of serving in the military with a "don't ask, don't tell" policy, although the tide may be changing 10 years after the implementation of this policy. And finally, service members who experience sexual assault may experience disruptions in their family lives that should be better understood.

Priorities for Training for Military Families and Those Who Serve Them

Throughout this chapter we present the symposium attendees' recommendations for training regarding specific issues faced by military families. Training is used here as a broad term including programming delivered directly to service members and their families or training for service providers who work with military families, including both civilian and military professionals (e.g., medical providers, chaplains, school personnel, social workers, psychologists, and therapists). Before addressing specific issues, we note several implications for reaching military families and for training providers.

Accessibility is a major issue for busy military families, especially those who do not live on or near military installations such as many National Guard or Reserve families. Rapidly expanding online resources may be helpful, but the evidence base so far is limited, and there are many examples of online resources that are poorly maintained. It is important, however, to offer multiple delivery mechanisms so that families can be served regardless of their personal characteristics, preferences, or location. In addition, greater outreach efforts appear to be necessary to extend training about military families into schools, primary care offices, and military units. Support from military command is essential in this regard.

Training for Providers

Providers serving military families are diverse. Some are uniformed providers working in military facilities on installations and at deployed locations. Some are civilians contracted by the military to serve military families on or off installations.

And some are civilians working in communities around the world who serve military families, sometimes without knowing it. For example, a pediatrician or schoolteacher in a local community may have the child of a National Guard or Reserve member as a patient or pupil without even knowing it. All providers serving military families should be well trained to use systemic, evidence-based interventions that recognize the entire family as the "patient." All providers also should be well versed regarding when and where to refer patients or clients elsewhere. For example, many civilian providers are not well prepared to deal with combat-related issues and should consider referring to a military or VA facility.

In order to establish effective working relationships with their military patients or clients, civilian providers in particular need to be at least somewhat knowledgeable about issues specific to military families. These issues might include military culture, the major demands of military life, and the major support mechanisms available to military families. And of course it would be helpful for community providers to take steps to become aware of the military families they are serving.

There are many resources available to help providers serve military families effectively, but many providers are not aware of them. In addition new clinical treatment guidelines are sometimes slow to migrate into widespread use. Greater efforts to engage, educate, and support civilian providers may be needed.

Organization of the Book

Like the research symposium that was its inspiration, this volume is organized into four sections, each containing several chapters focused on an issue of particular relevance to military families. The first section focuses on marital functioning. Fueled in part by media stories, federal legislators have expressed concern about the viability of military marriages. From a research perspective, the strategies and responses of marital partners as they experience deployment-related separations and reunion are highly instructive opportunities to learn about key marital processes. From a training perspective, better understanding of the intricacies of marital processes surrounding deployments will lead to education, prevention, and intervention strategies that are based on stronger evidence.

Marital and Family Functioning

Nearly half of those serving in the Armed Forces are married. The stability and quality of military marriages has received considerable attention as anecdotal evidence has mounted that the pressures of deployment are causing couples to divorce. Thinking beyond simply marital stability, we know that the challenges of deployment and of military life in general can present challenges to family relationships. On the other hand, it is also true that the military devotes enormous resources

to supporting military families, including housing allowances, subsidized child care, marriage enrichment training, employment support for spouses, and many other initiatives. The chapters in this section present evidence regarding the impact of deployment on marital stability and quality, as well as about the effectiveness of programs intended to promote healthy marital and family functioning.

Amid speculation that increased operation tempo and multiple deployments are causing more military marriages to end in divorce, and that the divorce rate in the military is higher than in the civilian population, the empirical findings remain mixed. In Chapter 2, Karney and Crown explore the impact of deployment on marital dissolution, reviewing evidence from prior wars that has found little to support the notion that deployment leads to divorce. The authors used an impressive database containing information about all U.S. military personnel married during the 4-year period following 9/11, and applied survival analysis to examine the incidence of deployment and marital dissolution. Among soldiers who were married after enlisting, greater time deployed actually decreased the likelihood of divorce. Contrary to popular belief and counter to crisis theory, deployment appeared to provide a protective effect for those most at risk: couples married at a younger age and those without children. One finding that did not receive as much attention relates to the fragility of women's marriages in the military. Marriages for female soldiers were much more likely to end during the time span studied than for males. Data regarding the relationship between deployment and divorce remain incomplete, however, given the short time that Karney and Crown were able to follow marriages in their study.

Erbes addresses the interplay of PTSD and couple functioning in Chapter 3. Erbes synthesizes the empirical literature on PTSD and the impact on family relationships and uses emotional processing theory to elucidate the process whereby couple relationships can promote the development or maintenance of PTSD. Two studies of National Guard soldiers deployed to Iraq are presented in this chapter. The first study utilized hierarchical multiple linear regression to study pre- and post-deployment predictors of family concerns and PTSD symptoms. The second study involved a smaller sample of NG soldiers and their partners and included self-report measures as well as interviews and behavioral observation tasks. Both studies underscore the importance of family functioning and support in the context of deployment as well as the reciprocal influence of relationship functioning and individual symptomatology. Findings indicate that pre-deployment family functioning is predictive of post-deployment outcomes, emphasizing the importance of systemic support for service and family members beginning with activation for deployment. Additionally, this study adds to evidence that service member psychopathology has important implications for family relationships, substantiating the need for appropriate family services.

Mounting evidence indicates that spouses of veterans with PTSD are vulnerable to psychological and marital distress related to veterans' experiences of combat-related post-traumatic stress symptoms. There are indications that spousal distress is directly related to the severity of the veterans' symptoms, but little information pointing to how the distress develops. In Chapter 4, Renshaw, Blais, and Caska introduce

mechanisms by which military spouses may develop these problems. The authors delineate the Interpersonally Oriented Cognitive-Behavioral Model of Spouses' Distress including veterans' and spouses' behavior and spouses' cognitions to explain the distress experienced by military spouses. Renshaw and colleagues conclude that spouses' perceptions of service members' PTSD symptoms are keys to the development of psychological and marital distress. When spouse and service member reports of PTSD symptoms correspond, the spouse is at lower risk for distress than when the reports differ. Spouses' psychological and marital distress may increase due to partners' PTSD. In turn, the spouses' psychological and marital distress may aggravate the service members' PTSD symptoms.

Chapter 5, by Heyman, Slep, and Nelson, describes the creation and implementation of North Star, an Air Force program designed to address "secretive problems." Suicidality, family maltreatment, and alcohol and drug abuse are seen as significant behavioral health threats to force protection and are primary concerns in the military population due to their prevalence and monetary and societal costs. Because these problems are so heavily influenced by social factors, the authors posit that prevention and intervention efforts necessitate a community-level response. As such, North Star, a research collaborative based at Stony Brook University, was founded to guide the implementation of these prevention and intervention efforts as well as evaluate the efficacy of such efforts. One strength of this program is that existing infrastructures in the Air Force were tapped to both assess community needs and functioning as well as implement new programming through the Integrated Delivery Service (a coalescence of all helping agencies on each Air Force base). The chapter concludes with results of a randomized controlled trial conducted at 24 Air Force bases. Twelve of the bases that received the North Star intervention showed a significant reduction in suicidality, prescription drug misuse, and partner physical abuse compared to the 12 control bases. This study provides evidence that utilizing existing military frameworks can be an effective method of reducing dangerous and secretive problems in the military.

Implications for Research about Marital and Family Functioning

This section outlines research and training efforts needed to prevent or address marital problems and bolster family relationships. Many of these recommendations are also applicable and important for service members who are involved in nonmarital romantic relationships.

Symposium attendees argued strongly that longitudinal studies of marital and family functioning should be a priority for future research. Such studies should pay close attention to relationship processes within the military context. In contrast to the "snapshots" provided by cross-sectional studies, longitudinal studies can provide "feature films" that reveal the processes through which marital satisfaction, dissatisfaction, and dissolution evolve. Especially important about longitudinal studies is the ability to examine lagged effects that may take considerable time to

emerge. Better understanding of the "time structure" of processes in military families will not only support the development of more effective prevention and intervention efforts, but may also provide useful insights about civilian families dealing with challenges that share some of the features of military life, such as separation, relocation, or dangerous occupations.

Marriage has been found to be a buffering or protective factor in some life domains. Researchers must continue to explore both the risk and protective factors of marriage and the relevant mechanisms in the military given policies and programs that differ from those in the civilian community. For instance, there may be protective factors that suppress divorce rates in the military. There has also been increased interest in the risk associated with spouse symptomatology. Identifying these mechanisms allows others to conceptualize and test the direct and indirect pathways that veterans' symptoms may lead to spousal distress and to establish why some spouses develop distress and others do not.

Support has been touted as a factor that can mitigate stress associated with deployment and reintegration. Several types of support may be important to explore: marital support, cohesion in military units, and support from or connections to other military families. Conference participants also identified potential moderators and mediators that should be considered in future research: gender of the service member, whether or not the service member is a parent, whether the service member is in an officer or enlisted pay grade, and the service member's military occupation.

Implications for Training about Marital and Family Functioning

There was consensus among symposium attendees that dyadic approaches to prevention or intervention that address couples or families as systems, as opposed to treating individuals in isolation, are much more likely to generate sustainable effects. Such approaches can help couples and families learn to share experiences and deal with shared challenges such as reuniting following deployment and handling contentious exchanges. Providers accustomed to working with individuals may need additional training to serve couples in this capacity.

Deployment presents couples with a variety of challenges. During deployment, each spouse is likely to face unique and challenging experiences that may later be hard to discuss or express feelings about. Discussing combat experiences with family members appears to be especially challenging for service members. Normalizing this difficulty is an important part of pre- and post-deployment briefings, but teaching spouses how to disclose symptoms and experiences after deployment may also be important. Providers who practice in the civilian sector may need basic information about military family life and the contours of deployment in order to serve military families effectively. This is especially important because some military families prefer to seek help from civilian providers.

Symposium attendees also agreed that providers who serve military families should be well prepared to deal with anger, outbursts, and power conflicts. Such exchanges do not routinely occur in military families, but there is evidence that the risk for hostility and violence is higher among veterans who are experiencing trauma symptoms related to combat. Practitioners should become familiar with the mechanisms that produce anger, techniques for managing it, the risk factors for domestic violence and appropriate responses to them, and be prepared to use that knowledge in treatment as well as in educating others.

Parenting and Child Outcomes

There is much to learn about how deployment experiences impact children and their relationships with their parents, in both the short and long term. There are few studies and little evidence so far to suggest that parent–child relationships suffer long-term effects as a result of physical separations like deployment, but studies consistently suggest that children experience elevated levels of a variety of psychological symptoms. Consequences for children appear to be more severe when their military parent experiences psychological problems as a function of their combat exposure (MacDermid Wadsworth, 2010).

In Chapter 6, Gibbs et al. summarize the current literature and empirical findings on child maltreatment in military families. The authors discuss the association between deployment and child maltreatment, noting that increased parental stress and child behavior problems appear to increase the risk of child maltreatment during deployments, especially combat deployments. The prevalence and the response of the military to cases of child maltreatment are compared with civilian communities. For instance, the military can remove an abusive parent from the home where the children live, in contrast to civilian communities where the children may be removed. The authors also address the co-occurrence of spousal abuse, substance abuse, and child maltreatment. In light of their finding that military children suffer from maltreatment, but not necessarily at higher rates than civilian children, as well as evidence that the military provides protective and risk factors for child maltreatment, the authors offer suggestions for supporting military families at risk.

Attachment scholars have classified children's reactions to parental separation and the potential impact of separation on parent–child relationships and children's development. In Chapter 7, Posada et al. extend these ideas to include the context of deployment and its potential effects on child-caregiver relationships and child outcomes. The chapter describes a study of attachment relationships in child-mother dyads from military families. In addition, the authors raise concerns about the nondeployed parent's ability to respond sensitively to children's needs. The authors give a detailed synopsis of attachment theory and related empirical evidence. In a study of 172 nondeployed mothers whose husbands had been deployed at least once, the authors found that quality of maternal care was a key predictor of outcomes of child security. Increased stress was linked to decreased maternal care,

whereas increased social support was linked to increased maternal care. Furthermore, quality of maternal care was linked to children's security, and both care and security were linked to children's social competence with peers.

Chapter 8, by Lester and colleagues, is a review of the potential risk and protective factors related to military children and families in the context of multiple deployments, and parental psychological and physical injury. The authors paint a picture of the daily experiences of a military family vis-à-vis the characteristics and demands of the military lifestyle and deployment. Noting that the vast majority of military families do well despite these challenges, the authors make a strong case for preventive intervention aimed at building family resiliency. The FOCUS (Families OverComing Under Stress) program is described. FOCUS is a family-centered program aimed at supporting family resiliency, destigmatizing psychological problems, and reducing barriers to care and has been implemented on Marine and Naval bases for families with at least one child over the age of five. Some of the strengths of this program include its sound theoretical and evidence base and its careful adaptation to military culture.

In Chapter 9, Chandra, Burns, Tanielian and Jaycox provide a review of the impact of deployment on service members and their families with specific focus on child academic and mental health outcomes. The authors conclude that while important research has been conducted on child outcomes, most of this research focuses on prior conflicts, and thus little is known about how children are functioning during OIF and OEF. Moreover, the findings are mixed about the well being of children and adolescents before and during deployment and after returning home. The authors describe a pilot study examining the experiences of military children and adolescents and their at-home caregivers during deployment and reintegration. Two strengths of this study are the inclusion of data from active-duty and Guard/Reserve component families as well as the use of children and at-home caregiver's experiences during the deployment and reintegration phases. The findings of the study highlight some key differences in the experience of deployment and reintegration for Guard/Reserve families (vs. active component families) including a sense that others did not understand what military life was like. Another finding indicates that younger children had more difficulty with homework while their parent was deployed.

Being the child of an active component service member can mean moving to a new duty station and home every few years, living in different countries, having a parent who works very long hours, sometimes 7 days a week, growing up around other military children, and at times watching your parent leave for deployments and then waiting with great anticipation for him or her to return. Being the child of a National Guard or Reserve service member can mean experiencing a fairly predictable life in terms of where one lives and goes to school, having a parent who has a civilian job and then leaves one weekend a month and a few weeks a year for training, not knowing many other children or families who have a member in the Guard or Reserve, and at times watching your parent leave for deployments and waiting with great anticipation for him or her to return. These scenarios only scratch the surface of what it is like to be the child of a military member, but are

meant to depict the ways in which these children are living in contexts that differ from those of civilian children. They are more complex when both parents serve in the military.

Implications for Research about Parenting and Child Outcomes

Symposium attendees agreed that the safety and welfare of military children is a primary concern. Several studies using large military samples have shown that deployment is related to increases in rates of child maltreatment, including both physical abuse and neglect (McCarroll, Fan, Newby, & Ursano, 2008; Gibbs, Martin, Kupper, & Johnson, 2007). Studies have not yet revealed, however, exactly how the nature and incidence of maltreatment change over the course of the deployment cycle (such as the differences between maltreatment during versus following deployment). It is also not yet well understood how the processes that lead to maltreatment in association with deployment are similar to or different from the processes that produce maltreatment at other times or in other families.

Another area of concern regarding research about children of military parents is secondary traumatization, the transmission and/or secondary effects of parental exposure to trauma on children. Although studies suggest that spouses and children both can be strongly affected by a service member's combat-related symptoms or injuries (Calhoun, Beckham, & Bosworth, 2002; Solomon et al., 1992), the mechanisms through which these influences occur are not yet well-understood and it is not clear whether secondary traumatization can itself produce diagnosable posttraumatic stress disorder or other psychological disorders.

Symposium attendees also emphasized that parents can model not only distress but also coping skills for their children. More research is needed regarding the effects of specific parental coping strategies for children with particular characteristics. Anecdotal evidence suggests, for example, that military children report taking on more responsibilities during deployment. While this can be a positive aspect of deployment lending to maturity, research examining the impact of "adultification" on children of different ages is needed. Much of this research would generate insights that would be relevant to nonmilitary populations of children and parents in difficult circumstances.

Implications for Training about Parenting and Child Outcomes

Symposium attendees' recommendations for training about parenting and child outcomes centered largely on increasing parents' knowledge about typical patterns of development in children, and effective coping strategies to model for children. In the domain of child development, specific topics include behaviors that are reasonable to expect of children at different developmental levels, the development,

maintenance, and implications of strong attachment relationships between parents and children, and children's typical and atypical reactions to parent separation and reunion.

In the domain of coping skills, symposium attendees suggested that parents be trained to model constructive coping skills for their children. Dyadic coping, coordinated between parents, is a useful tool not just for within the marriage, but for the entire family. Parents can also learn effective strategies for maintaining a connection between children and service members during deployments and reestablishing the connection when the deployed parent returns.

These "core" educational topics can provide a foundation for additional training for parents regarding stress, resiliency, and parenting skills specifically related to the defining experiences of military life, deployment among them. Ideally, parents also would be educated about the symptoms of depression among children and adolescents, and knowledgeable about their treatment options. Finally, parents should know the risks and signs of child maltreatment and where to turn for help.

Family Sequelae of Wounds and Injuries

Researchers are only just beginning to thoroughly explore the long-term consequences of physical and psychological wounds for service members' family relationships. Family members often become caregivers, sometimes to the exclusion of their previous roles as spouses and partners, which can lead to relationship difficulties and caregiver burnout. It is important to understand the processes through which families adapt to their new lives and renegotiate their roles in the aftermath of serious wounds and injuries.

Chapter 10 provides evidence that veterans with trauma-related psychopathology are at increased risk for perpetrating interpersonal violence (IPV). Taft, Walling, Howard, and Monson use social information processing models to suggest the mechanisms through which social skills and information processing deficits prevent partner-violent men from effectively dealing with social stimuli. The authors describe current interventions used with men who engage in IPV and discuss the success and limitations of each, noting that no empirically validated intervention exists for military members or veterans. In addition, the authors include a description of two prevention/intervention programs. The Strength at Home programs are offered in both a couple format and in a men's group. The former is for couples who are at-risk but have not experienced IPV. The latter is for OIF/OEF veterans who have perpetrated IPV in the past year. The authors conclude that intervention and prevention programs for IPV must address PTSD in order to be efficacious.

Badr, Barker and Milbury focus in Chapter 11 on the role of intimate partners in the psychosocial adaptation of wounded service members. More so than in previous wars, service members are surviving war injuries. The emotional and physical repercussions can be enormous and long lasting both for the service member and

for their families, who may become primary caretakers. The authors review literature related to the impact of hallmark war wounds on couple's functioning. Emerging from these studies are findings that couples have difficulty reconnecting and reestablishing intimacy after suffering a combat wound. Alternatively, couples who are able to maintain their relationships make better adjustments. From here the authors emphasize that identifying key relationship processes is an important step in encouraging future scholarship to focus on couple interaction and the impact on closeness and adaptation. Several theoretical frameworks, dyadic stress and coping models and relationship process models, are described. The chapter concludes with strong recommendations for future study including major issues that need to be explored and important moderators to consider.

Just as little has been written about veteran couples dealing with wounds, even less literature is available on children of wounded veterans. In Chapter 12, Mazur describes two studies of family disability experience that establish a solid foundation for thinking about the impact of veteran wounds on children and adolescents and on parent–child relationships. Using the social model of disability and Felner's transitional events theory, Mazur explored negative and positive disability related-events by interviewing parents, children, and professionals. Interviews asked about the types of disability-related events that were encountered and whether these were perceived as positive, negative, or ambiguous. Mazur found that parents and adolescent children reported more positive than negative disability-related events and found evidence that adolescent children had adapted well to having a parent with a disability. However, consistent with the transitional events model, frequency of stressful life events puts both parents with an acquired injury and their adolescent children at risk for developing internalizing and externalizing behaviors and poorer positive adjustment.

In Chapter 13, Cozza and Guimond provide guidance for working with combat-injured families. The events that unfold for families after the injury of a service member involve enumerable changes. The authors emphasize that the changes after an injury affect the entire family system in significant ways, which may challenge their physical, psychological, and emotional well-being over time. The authors carefully detail the ways in which the injury to a family member may impact family relationships. Special consideration is given to children of injured service members across developmental stages. To effectively help military or veteran families confronting transitions related to injury the authors strongly recommend the use of family-based interventions in addition to psychological first aid.

Wounded service members are surviving combat-related injuries now more than any previous conflicts. Some of the signature injuries of this war are traumatic brain injury (TBI), spinal cord injury, burns, blindness, hearing loss, and injury to limbs requiring amputation. Some of the less visible injuries, such as post-traumatic stress disorder, anxiety, and depression, are being detected at high rates during post-deployment screenings. While the physical and financial repercussions of these injuries are somewhat straightforward, very little is known about the long-term consequences of these injuries for military families. Injuries, whether visible or invisible, bring change to the family system.

Implications for Research about the Family Sequelae of Wounds and Injuries

One of the primary concerns of symposium attendees regarding research on wounds and injuries is the paucity of data regarding the implications for service members and families beyond the military career. Some injuries are so severe or debilitating that the service member must be discharged from the military, but little is known about how their experiences before leaving the military connect to their later experiences, including their experiences with the Veterans Health Administration. Other injuries or symptoms of psychological distress are not severe enough to require leaving the military, but it is nonetheless important to observe service members with these "subthreshold" symptoms as they continue to serve, in order to understand their long-term processes of adjustment and changes in health and well-being over time.

In general, the literature about acquired wounds and injuries contains many gaps in terms of attention to processes of family adjustment. There is a great deal of emphasis on caregiver burden, but much less attention to processes of adjustment in parent–child relationships, or to positive implications for spouses or caregivers.

Finally, symposium attendees agreed that it is important to explore the aspect of social support in adjustment to wounds and injuries. Some injuries may make it difficult to sustain social support because of impaired mobility or other sequelae. Families may be required to move to a different location for long-term treatment, also challenging existing systems of support. And changes in personality or temperament may make it difficult to build new relationships. As with other aspects of adjustment to wounds and injuries, there are many gaps in this knowledge base.

Implications for Training about Wounds and Injuries

Symposium attendees agreed that much of the training needed to help families adjust to living with the sequelae of wounds and injuries is similar to the training needed for a variety of challenges. For example, similar to their experiences during deployment, families may need assistance adjusting to new roles, but in the case of wounds and injuries, the adjustments are likely to both take longer, as recovery may be prolonged, and last longer, if the service members' abilities are permanently altered. Families may need special support to deal with the fear, anger, frustration, and grief that can result from a life-altering injury. Attendees also agreed, however, that considerably more work is needed to create and validate effective programming for families dealing with wounds and injuries. For example, there is little programming available to help children adjust to a parent's altered condition and capabilities. In addition, many civilian providers may need special training to be able to support wounded service members and their families in collaboration with existing resources for service members and veterans.

Single Service Members

Although single service members do not usually spring to mind when considering military families, about half of the members of the Armed Forces are unmarried and therefore likely to rely on parents, siblings, and other family members for support as much as or more than married service members. Relatively little is known, however, about the family circumstances experienced by single service members, who are a diverse group comprising both never- and previously married individuals. One of the innovative contributions of the chapters in this section is exploration of the diversity of the population of single service members.

In Chapter 14, Hosek and Martorell detail findings from their inquiry into the differential effects of deployment for service members based on their marital status. Using an economic framework, the authors analyzed databases of survey data and administrative data to explore whether deployment had an effect on the decision to reenlist for married service members versus single service members. This study explores the connections between hostile deployment and work stress, personal stress, intentions to reenlist, and actual reenlistment by way of linear probability regression analysis. The results indicate the effect of deployments is typically positive for married service members and negative for single service members. Further, the authors explain that assortative mating will lead service members with a higher "taste" for military life to marry while enlisted and choose mates who also have a higher taste for military life, whereas singles who do not enjoy the military lifestyle will postpone marriages until they reenter the civilian world.

Riviere and Clark explore differences in post-deployment well-being between married and single (never married and previously married) service members in Chapter 15. Questions have been raised about whether marriage really is a protective factor for military members. The authors explain two theoretical perspectives that attempt to explain the relationship between marriage and greater well-being. In addition the authors explore group differences in risk taking behavior. Riviere and Clark describe their study of 4,346 active duty Army soldiers 3–4 months after return from deployment using data from the Post-Deployment Health Reassessment (PDHRA). The authors were able to appreciate differences among soldiers according to their relationship status. Married soldiers fell in between the two groups of single soldiers in terms of well-being; previously married soldiers reported the poorest well-being, both physical and psychological, while never-married soldiers reported the most positive well-being. Being married was generally associated with lower incidence of risk behaviors.

Bray, Spira, and Lane examine the influence of family status on substance abuse, stress, and mental health in Chapter 16. This study not only considers differences for single and married service members, but differentiates married members who are not accompanied at their duty location by their spouse. The authors bring to the light the important finding that not only were single service members at higher risk of substance abuse and mental health issues, but that unaccompanied married members behaved in some ways more like single service members, with higher levels of

alcohol, drug, and tobacco use and rates of depression, PTSD, and suicidal behaviors than accompanied married members.

Kelley, Doane, and Pearson address the unique stressors faced by mothers in the military. Chapter 17 reviews literature specific to women in the military noting that it is more common for females in the military to divorce than males (a finding echoed in Chapter 2 by Karney and Crown). In addition, the proportion of single mothers in the military is greater than the proportion of single fathers. The authors focus their study on the psychosocial functioning of Navy mothers and their children. The sample included both married and single Navy mothers, and compared those with an upcoming deployment to those with no anticipated deployment. Using path analysis with pre- and post-deployment measures, the authors found a strong association between maternal psychological adjustment and child behavior. Single Navy mothers experiencing more psychological symptomatology had children that exhibited greater internalizing and externalizing behaviors, but this was not true for married Navy mothers and their children.

Implications for Research about Single Service Members

Some important research questions about single service members involve learning more about how their individual circumstances affect their adjustment. With rising concerns about service member mental health and suicide risk, the examination of support systems among single soldiers is vital. Social support for single service members can be wide ranging, from friends, to intimate partners, to parents, to members of their unit. It is important to understand more about who is a part of the social support structure of single soldiers and how they function so that prevention and intervention programming can be targeted appropriately. Research should look at the social support needs of single service members and how the presence or absence of social support affects single service members. For instance, a research question might ask whether the presence of family members influences the likelihood that single service members will seek out and utilize support services. It is also important to understand more about what logistical challenges single service members encounter. For example, how does the mobile nature of military service impact single service members?

Implications for Training about Single Service Members

Training implications for single service members emphasize that this diverse group can face just as many challenges as married members. Programming offered to single service members should be developed to accommodate people from their social structure such as parents, siblings or intimate partners. For instance, a program

or service developed for parents should be inclusive of service members who are single parents. This may require existing programs to adapt their training and intervention services accordingly.

Conclusion

It is encouraging to reflect on the amount of work completed and in progress that addresses the experiences and needs of military families. This chapter has summarized the current landscape of research and training regarding military families and reveals that while much work remains, we have clear direction for attending to the most urgent issues. Research should have an important role in informing programs, policies, and practices, as well as future research regarding the well-being and needs of military families. To close, we have chosen the top ten most pressing action items identified by conference attendees as needing attention from scholars and practitioners. We hope that students, scholars, policy-makers and practitioners all find them instructive.

Top Five Priorities for Research about Military Families

1. Examine family and marital relationships longitudinally (even after service members leave the military), focusing on quality, process, outcomes, and lagged effects as well as risk and protective factors in those relationships.
2. Study the effects of deployment on child well-being and parent–child relationships. Specifically, more needs to be known about how deployment affects different age groups, gender differences among children, and what characteristics of parent–child relationships (both deploying and at-home parents) seem to buffer the effects of deployment.
3. Study renegotiation processes in military families. Examine *how* military families adapt to transitions to and from deployment and examine the conditions under which families navigate these transitions successfully.
4. Learn more about families of service members with subthreshold symptoms, and those coping with psychological or physical wounds and injuries.
5. Investigate the impact of family member presence or absence on help-seeking among single soldiers.

Top Five Priorities for Training about Military Families

1. Train providers about military culture and climate, as well as issues specific to military families and specific military subpopulations.

2. Use systemic and evidence-based approaches that maximize impact in addressing individual or relational problems.
3. Teach adults skills that will have "trickle-down effects" on the entire family.
4. Educate service members and spouses about the importance of parent–child attachment as well as the warning signs of child psychological health problems.
5. Tailor training to single service members that recognizes their unique needs and their diversity.

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Part I
Marital Functioning

Chapter 2
Does Deployment Keep Military Marriages Together or Break Them Apart? Evidence from Afghanistan and Iraq

Benjamin R. Karney and John S. Crown

Abstract Marriages under stress are generally at increased risk of ending in separation and divorce. Since 2001, military marriages have been under unprecedented levels of stress, with deployments longer and more frequent than in recent decades. The analyses described here drew from the personnel records and deployment histories for the entire population of the U.S. military to estimate the effects of time deployed to Afghanistan and Iraq on the subsequent risk that a military couple will dissolve their marriage in the first 3 years of the conflict. Contrary to expectations, time deployed was associated with reduced risk of marital dissolution for most of the military, and longer time deployed was associated with greater reductions in risk. Moreover, the benefits of deployment were greater for younger couples and couples with children. Together, these results highlight the frequently overlooked role of supportive institutions in promoting resilience in marriages under stress.

To the extent that maintaining a successful marriage takes work, then doing that work should be harder under conditions of stress. Indeed, compared to couples who are relatively free from stress, married couples under stress do tend to have more difficulties communicating effectively (Neff & Karney, 2004; Story & Repetti, 2006), and evaluate their relationships more negatively (Karney, Story, & Bradbury, 2005; Tesser & Beach, 1998). Couples facing chronic difficulties, such as financial strain, are at significantly higher risk of divorcing compared to couples in more supportive environments (e.g., Bramlett & Mosher, 2002; Conger et al., 1990). Moreover, challenging events that affect large numbers of couples, like natural disasters, tend to be associated with elevated rates of divorce among affected couples (e.g., Cohan & Cole, 2002).

Acknowledging the role that external stress may play in marriage has led, in the years since the terrorist attacks of September 11, 2001, to rising concerns for the

B.R. Karney (✉)
Department of Psychology, University of California,
P.O. Box 951563, Los Angeles, CA, 90095-1563, USA
e-mail: Karney@psych.ucla.edu

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marriages of service members in the U.S. military. These concerns stem from two observations. First, the modern military is, for the most part, a married military (Hosek, Asch, Fair, Martin, & Mattock, 2002). Not only are the majority of service members married (Segal & Segal, 2004), but those who are unmarried enter marriage at higher rates than comparable unmarried civilians (Cadigan, 2000). As the largest employer in the country, the U.S. military is currently "responsible for more family members than personnel in uniform" (Segal & Segal, 2004, p. 31) and together this includes upwards of three million people.

Second, since the beginning of military operations in Afghanistan and Iraq, the demands on the U.S. military have been more pronounced than at any time since the Vietnam War (Hosek, Kavanagh, & Miller, 2006). Deployments in particular have been longer and more frequent, especially for the Army and the Marines, for whom it is now common to be deployed multiple times with only brief intervals between one deployment and the next (Defense Manpower Data Center, 2004). Moreover, the heightened pace of deployments has affected reservists as well, over half of whom have been activated involuntarily for periods of a year or more (Loughran, Klerman, & Martin, 2006). Among the many consequences of these demands is the fact that large proportions of service members have been required to spend extended periods separated from their families.

In the latter half of 2005, press reports raised concerns that that the increasing length and heightened pace of deployments had led to rising rates of divorce in military marriages (e.g., Fiore, 2005; Jaffe, 2005; Zoroya, 2005). In every case, reporters highlighted the difficulties that families face when male soldiers are deployed and their wives are left alone to maintain the home. A front page story in the *New York Times* summed up the underlying idea: "Military deployments have a way of chewing up marriages, turning daily life upside down and making strangers out of husbands and wives" (Alvarez, 2006). In other words, the stress of deployments damages marriages, leading to divorces that would not have occurred otherwise. Taking these concerns seriously, the federal government in 2006 allocated an unprecedented level of funding for programs and services to address the needs of military families.

Yet, despite widespread acceptance of the idea that deployments harm military marriages, the evidence for this association is surprisingly limited. The goal of the current study is to address this gap in the existing literature and describe new analyses to evaluate, more comprehensively than has been attempted in the past, the effects of deployment on the risk of dissolution in military marriages. Toward this end, the rest of this introduction is organized into three sections. The first section reviews the existing literature that has examined the effects of deployment on marriage, highlighting the limitations and inconsistencies within this literature. The second describes theoretical perspectives on how the stress associated with deployments might affect the outcomes of military marriages. The final section provides an overview of the current study, which drew upon personnel records for the entire population of the U.S. military to estimate the effects of time deployed on subsequent risk of marital dissolution.

Prior Research on the Effects of Deployment on Military Marriages

Reuben Hill, in his classic book *Families Under Stress* (1949), was among the first to study how military families respond to being separated by long deployments during World War II. In the intervening years, one might expect that the effects of deployment on military marriages would have been well established. Yet clear evidence for an effect of deployment on marital outcomes has been hard to come by, for several reasons. First, since Hill's pioneering work, the meaning of military service has changed. During World War II, for example, conscription meant that military service was a fact of life for the majority of eligible males (Segal & Segal, 2004). Since the creation of the all-volunteer military in 1973, this has no longer been the case. Thus, even though there has been excellent research by Elder and his colleagues on how service during World War II affected the families of that generation of males (e.g., Elder, 1987; Elder, Pavalko, & Hastings, 1991), this work is unlikely to apply to veterans of subsequent wars (e.g., Ruger, Wilson, & Waddoups, 2002) or to today's all-volunteer force.

Second, even research on more recent conflicts has tended to examine the effects of military service in general, rather than the effects of deployment per se. In such analyses, associations between service and marital outcomes appear to be either ambiguous or positive. For example, two independent analyses of data on Vietnam veterans have found that, controlling for age at marriage and other demographic variables, divorce rates for those who served during that war either did not differ or were lower than the rates for those who did not serve (Call & Teachman, 1991; Zax & Flueck, 2003). Analyses of retrospective data from the National Survey of Families and Households (NSFH) indicate that differences in divorce rates between veterans and nonveterans emerged in the years after the Korean and Vietnam wars, rather than during them when military service was presumably more stressful (Ruger et al., 2002). Yet, none of these analyses distinguished between military service and the specific experience of being deployed.

Third, research that has examined the effects of deployment directly has produced inconsistent results. For example, Angrist and Johnson (2000), drawing upon data from the 1992 Survey of Officers and Enlisted Personnel (SOEP), evaluated the effect of time spent deployed on the marriages of those who served in the 1991 Persian Gulf War. Controlling for background variables, female service members who had been deployed were significantly more likely to divorce than those who had not been deployed. However, for male service members, who comprise over 85% of the military, these analyses revealed no significant differences in divorce rates between those who were deployed and those who were not deployed.

Fourth, prior studies in this area have relied mostly on cross-sectional and retrospective data. For example, one survey of soldiers deployed during Operation Desert Storm asked those whose marriages remained intact to report whether their deployment had affected their marital satisfaction (Schumm, Hemesath, Bell, Palmer-Johnson, & Elig, 1996). On average, these soldiers reported no significant

drop in satisfaction, but the lack of a comparison group of nondeployed soldiers, and the reliance on retrospective reports of change, prevent strong conclusions. Similar problems weaken a survey of spouses of soldiers deployed during that war (Rosen, Durand, Westhuis, & Teitelbaum, 1995). On average, wives in this study report that they coped effectively during their husbands' deployment and remained close to their partners, but it is not clear how this group compares to wives of soldiers who were not deployed.

Finally, prior research on the effects of deployment has relied exclusively on data provided by volunteer respondents. In most prior research, these have been convenience samples, and the relationship of these samples to the military population has been impossible to evaluate. In the best available survey research on the military, the Defense Manpower Data Center (DMDC) administers periodic web-based surveys of service members or their spouses (e.g., the Status of Forces surveys). The sample sizes in these surveys tends to be large (>10,000 respondents), but these respondents are nevertheless self-selected and represent less than 1% of the Active Component of the military. Furthermore, members of the Reserve Components are not included. Thus, available data on how service members and their spouses have reacted to deployments may not represent the true effects of deployment in the military population.

In sum, despite enduring interest in the effects of deployment on military families, to date there has been little consistent evidence that being deployed increases the risk of divorce. Yet, methodological limitations in prior studies suggest that this hypothesis has yet to receive a definitive test. Bell and Schumm (2000) reached a similar conclusion in their review of this literature, observing that "Although the public associates deployments with high divorce rates, there is no direct evidence that deployments cause divorce. … Accordingly, any relationship between deployments and subsequent divorce may be an artifact of self-selection or predeployment conditions" (Bell & Schumm, 2000, p. 146).

Theoretical Perspectives on Deployment and Military Marriage

The lack of clear evidence of an effect of deployment on divorce in military marriages has not diminished the widespread belief that such an effect exists. One source of this belief is the undisputed fact that deployments are a source of considerable stress for military families. A number of qualitative and survey studies have described these stresses in detail, noting that each stage of the deployment cycle (e.g., notification and preparation, separation, and reunion) is associated with unique and severe demands on military couples (e.g., Amen, Jellen, Merves, & Lee, 1988; Figley, 1993; Rosen, Durand, & Martin, 2000; Rosen et al., 1995). For the deployed service member, these stresses include not only separation from loved ones, but also long hours, cultural dislocation, and risk of injury and death (Segal, 1989). For the family members left behind, deployment entails not only anxiety and

uncertainty over the spouse's well-being, but also the burdens of maintaining a household in the spouse's absence.

Given these necessary adjustments, it is not surprising that spouses of service members, when surveyed, name deployments as one of the most significant challenges of life in the military (Rosen & Durand, 2000). Recent evidence suggests that these stresses are leading to a number of negative consequences for service members, including higher rates of smoking, drinking, and illicit drug use (Bray et al., 2006), and high rates of service members seeking counseling (Hoge, Auchterlonie, & Milliken, 2006). To the extent that deployment is not only stressful itself, but increases risk for poorer mental and physical health outcomes, it makes sense to predict that deployments will have the same effects on marriage as other stressful events and circumstances, such as illness, poverty, and unemployment, all of which are associated with lower marital quality and higher rates of divorce (Bramlett & Mosher, 2002; Rohrbaugh et al., 2002).

To account for these effects, most existing models borrow heavily from Hill's (1949) original ABC-X model of family crises, or *crisis theory*. According to the model, when faced with a source of stress (A), families bring to bear their available resources (B) and their ways of interpreting the stressor (C), that is, as either a challenge to be overcome or a catastrophe to be endured. A family's response to the crisis (X) will be a function of these three elements, such that families whose resources and interpretations are appropriate to meet the challenge posed by a given stressor should grow more cohesive, whereas families less able to mount an adaptive response to the stressor should be at increased risk of growing apart and dissolving.

Subsequent research on stress and marriage has refined Hill's original model in several ways. First, research has confirmed that demands outside the home do affect spouses' evaluations of their relationships, such that on average spouses report lower satisfaction with their marriages when they are confronting higher levels of external stress (Karney et al., 2005; Tesser & Beach, 1998). Second, observational and longitudinal research has begun to identify specific mechanisms through which external stress affects marital processes. Specifically, when couples are under stress, not only do they have more problems to deal with and less time for intimacy and relationship maintenance, but their ability to resolve conflicts in an adaptive manner suffers as well (Bodenmann, 1995; Neff & Karney, 2004; Story & Repetti, 2006). Third, current research has supported Hill's original suggestion that the way couples respond to a specific acute stressor depends in part on the resources available to cope with the problem. The more chronic problems a couple must deal with, and the fewer sources of social support, the more negatively their marriage will be affected by specific acute stressors when they arise (Karney & Bradbury, 2005; Karney et al., 2005).

To date, research elaborating Crisis Theory has drawn almost exclusively from the civilian population. Yet applying the lessons of these recent developments toward understanding the effects of deployment suggests several concrete hypotheses about the how deployments should affect military marriages. First, the theory predicts a main effect of being deployed, such that, all else being equal, couples

experiencing the stress of deployment should be at greater risk of negative outcomes than couples who are not exposed to deployment, or who are exposed to deployment less (i.e., fewer days deployed). This is the effect that news reporters and military spouses themselves find intuitive, but that has yet to be examined with adequate data.

Second, to the extent that part of the stress of deployment stems from the non-deployed spouse having to bear an increased childcare burden, deployment should be more stressful for couples with children than couples without children. Thus, the theory predicts that couples with children in the home should be more negatively affected by deployments than couples without children.

Third, to the extent that a couple's level of resources facilitates more or less adaptive responses to stress, then military couples with the fewest available resources should have the most restricted ability to respond adaptively during separations. It follows that deployments should be experienced as more stressful, and thus more damaging, to the marriages of enlisted service members, who tend to be younger, less educated, and more likely to be exposed to combat, as compared to the marriages of officers, who are on average older, better educated, and more likely to be committed to careers in the military. Regardless of rank, this premise further suggests that younger couples, who by definition will have been married less time, should be at greater risk after deployments than older couples, who are likely to have a longer shared history from which to draw strength.

Finally, the theory suggests different reactions to deployment between members of the Active and Reserve Components. Members of the Reserve Component, because they are not engaged in military service full-time, are less likely than service members in the Active Component to anticipate being deployed, more likely to be engaged in nonmilitary activities that might be disrupted by deployment, and less likely to be closely affiliated with a military base from which they might draw support (Loughran et al., 2006). As a result of these differences, the theory predicts that deployments should be more stressful, and so should be more strongly associated with negative marital outcomes, for members of the Reserve Component than for members of the Active Component.

Overview of the Current Study

The ideal approach to evaluate hypotheses regarding the effects of deployment on risk of divorce would be *survival analysis* (Willett & Singer, 1995), a statistical technique to account for the timing of discrete events (in this case, marital dissolution). To date, survival analysis has never been applied toward understanding the dissolution of military marriages because this approach makes high demands on the data. For example, survival analysis requires repeated measures of individuals over time. In this case, it would require data on the marital history and the deployment history of individual service members since the beginning of military operations in Afghanistan and Iraq. By identifying when service members were married, such a

data set would allow for analyses that compare individuals married for the same length of time before they were deployed. By accounting for the specific periods that each service member is deployed, such a data set would allow for analyses that examine only those marital dissolutions that occur after service members have returned from their deployments. Even the Status of Forces surveys conducted by DMDC do not contain such data.

The current study, however, examined a data set that did allow survival analyses: military service personnel records and deployment histories. Each branch of the military maintains personnel records on each service member within the Active and Reserve Components. These records contain data on ethnicity, age, and marital status, among other data, and are compiled quarterly and maintained by DMDC. By linking the quarterly summaries over time, it is possible to describe transitions in the marital status of individual service members. Since the onset of military operations in Afghanistan and Iraq, DMDC also maintains records of the deployment histories of each service member that has served in either of those conflicts. By linking the deployment histories to the personnel records, it is possible to examine how length of time deployed to Afghanistan or Iraq predicts a service member's subsequent risk of ending a marriage, controlling for other information available in the service records, such as gender, ethnicity, age at marriage, and parental status.

For several reasons, access to these data offered us an unprecedented opportunity to evaluate the effects of a highly salient stressor on the marriages of a sizeable and noteworthy segment of the population. Most importantly, we were given access to data, not from a sample of service members, but from the entire population of the military since the beginning of the current conflicts, including all of the services, enlisted members and officers, and the Active and Reserve Components. In addition, the deployment history data included a cumulative tally, compiled quarterly, of the number of days that each service member spent deployed, a level of detail that has never been matched in prior research on this subject. Finally, although service members themselves inform their personnel offices when they transition into and out of marriage, their deployment histories are recorded by the military, and so were not subject to the presentational and memory biases that plague self-reports.

Methods

Data Source

The current analyses examined service personnel records and deployment history data from every individual that has served in the United States military since the beginning of fiscal year (FY) 2002 (i.e., fall of 2001), the year that military operations began in Afghanistan in response to the terrorist attacks of September 11, 2001.

Each service maintains these records in an idiosyncratic way. In the absence of a centralized database, the services currently send monthly extracts of their service records to the DMDC, where the data are assembled into forms that can be analyzed. For this project, DMDC was asked to generate quarterly summaries of the monthly extracts, beginning with the first quarter of FY2002 and ending with the last quarter of FY2005. These summaries include data on every person who served in the armed forces during that period. To conduct these analyses, we drew from the quarterly personnel summaries to create a longitudinal data set that linked information from individual service members across quarters. This file was then linked with a separate file provided by DMDC that contained deployment histories for all service members deployed since military operations began in Afghanistan and Iraq. To allow controls for prior marital status and length of time married, these analyses were conducted only on the 566,895 individuals who entered into marriages *after* the current conflicts began, that is, entered marriage after September of 2001. The result was a file containing data from 48 consecutive months that allowed us to map, from FY2002 through FY2005, the timing and cumulative length of time these individuals spent deployed against the timing of their marriages and marital dissolutions.

Measurement

Personnel records include considerable data on each service member. Only the most relevant variables were included in the data set assembled for these analyses. Many of the variables in these records are stable from month to month and change only when the service member reports a change in status (i.e., getting married, getting divorced, having a child) to the appropriate personnel office. Thus, the marital transitions of greatest interest here are all reported at the discretion of the service member. That said, it is in the interests of the service member to have his or her accurate status reflected in the personnel record, as these records determine benefits and level of pay. Thus, we may have reasonable confidence in the transitions identified for each individual member.

Defining marital status categories. The critical variable for these analyses is a single item in the personnel record describing marital status. All of the services code for marital status in the same way, using one of the following codes: M = Married; D = Divorced; A = Annulled; I = Interlocutory (i.e., in the middle of legal proceedings but not yet officially granted a divorce); L = Legally Separated; N = Never Married; W = Widowed; Z = Unknown. Only those individuals with a status code of M were treated as married in the analyses described here. In contrast, to assess the end of military marriages, the status code of D for "divorced" was viewed as too restrictive. In the broader literature on civilian marriage, descriptions restricted to divorce are known to underestimate marital disruption, because a substantial portion of marriages end through legal separation and other means even if they never register as a divorce (e.g., 11%; Castro-Martin & Bumpass, 1989).

We use the term *marital dissolution* to refer collectively to all of the ways that marriages can end by choice, that is, through divorce, legal separation, or annulment (e.g., Karney, Bradbury, & Johnson, 1999). Accordingly, marriages in these analyses were considered dissolved if the marital status of a service member transitioned from M (married) to D (divorced), A (annulled), I (interlocutory), or L (legally separated). Marriages that ended in the death of a spouse (i.e., widowed) were not counted as dissolutions.

Control variables and moderators. Personnel records contain data on several other variables that were included in all analyses as control variables and also examined as potential moderators of deployment effects. These included *gender* (1 = female; 0 = male), *age when married*, *presence of children* (1 = yes; 0 = no), and *race*. For these analyses, race was coded in terms of three variables: black (1 = black; 0 = non-black), white (1 = white; 0 = non-white), and other (1 = not black or white, 0 = black or white).

Analysis Strategy

To evaluate the effect of deployments on subsequent risk of marital dissolution, the data were examined with *multiple-spell discrete-time survival analyses* (Willett & Singer, 1995). Because this method allows the model variables to update at each time period during the marriage, there were several benefits to this approach. First, unlike multivariate regression, survival analyses account for the timing of the dependent variable, that is, whether or not those service members who were married during their deployments experienced a marital dissolution *subsequent* to their deployments. Second, this approach allowed us to account for the cumulative effects of longer or shorter periods of deployment. Third, this approach allowed us to ensure that individuals were matched on their marital duration in all analyses, that is, that the analyses evaluated risk of dissolution for individuals taking into account how long they had been married. Fourth, this approach allowed us to conduct multivariate analyses at the same time, controlling for other demographic variables known to be associated with risk of marital dissolution.

To account for risk of marital dissolution, we estimated models that contained three types of variables. The first group consisted of *demographic data* treated as control variables. These included gender, race, age when married, and the presence of children. Examining these variables provides a check on the analyses, that is, there can be greater confidence in the results of the analyses of deployment effects to the extent that results obtained for the demographic variables match results obtained in other research addressing the effects of the same variables on marital dissolution.

The second group consisted of two variables created to test the *direct effects* of deployment on subsequent risk of marital dissolution. One of these was the total number of days deployed while married that the individual had accumulated by a given marital duration. This variable estimated the linear effect of the number of

days deployed on dissolution risk. The other variable entered in this group was a squared term, designed to estimate curvilinear effects, that is, whether the effects of shorter deployments differ from the effects of longer deployments. Preliminary analyses suggested that curvilinear component of the deployment effect was rarely significant, and was very small even when significant. To simplify the presentation of the results, the estimates of the curvilinear effects are not presented below, but the term was included as a control in all models estimated.

The third group consisted of *interaction terms* created to estimate whether the effects of deployment are moderated by any of the demographic variables examined in the first group. All three groups of variables were entered simultaneously, so the results for each set of variables are adjusted for the other variables in the model.

It is worth highlighting that personnel records provide data on service members only while they are in the service. Personnel who leave the service before experiencing a transition are therefore missing from these data, even though it can be expected that the effects of military service on marital outcomes may well extend beyond the length of service itself. The data are therefore *right censored*, and appropriate controls for right censoring are implemented in the analyses (e.g., Willett & Singer, 1995). Nevertheless, the fact that the analyses address only the transitions that occur while serving means that the trends and patterns reported here are likely to underestimate the true effects of military service on marital outcomes throughout the lifetime of those who have served.

Results

Analyses were run separately on data from enlisted members and officers and separately for each of the services of the Active Component, the Reserve Component, and the National Guard, for a total of 20 separate analyses. Tables 2.1–2.3 provide the estimated weights for each variable in the models for the active services, the Reserve services, and the National Guard, respectively. The tables also report the total number of individuals that provided data for each analysis. The weights reported in these tables can be understood as the association between a unit increase in the variable and the change in the risk of a marriage being dissolved in a given quarter, controlling for the other variables in the model. Thus, positive weights indicate that a variable is associated with increased risk of dissolution, and negative weights indicate that a variable is associated with decreased risk of dissolution.

In general, the pattern of significant results in these analyses, especially for the demographic variables, was stronger for the Active Component than for the other components of the military. This is likely due to the fact that members of the Reserve Component and National Guard are older than active duty members on average, and so are substantially less likely to be entering a marriage in a given year, lowering the power of those analyses to detect significant effects. Despite these limitations, however, the general pattern of results for the analyses of the

Table 2.1 Survival analysis results for Active Component

	Army		Navy		Air Force		Marines	
	Enlisted	Officer	Enlisted	Officer	Enlisted	Officer	Enlisted	Officer
N	112,997	18,612	110,343	16,522	81,261	14,110	54,472	3,442
Demographic variables								
Age at marriage	*−0.061****	*−0.018****	*−0.060****	*−0.065****	*−0.010**	*−0.002*	*−0.095****	*−0.095****
Gender (F vs. M)	0.131**	*−0.332****	0.326***	0.384**	0.619***	0.670***	0.708***	1.178***
Children (yes vs. no)	*−0.507****	*−0.124**	*−0.285****	0.003	*−0.495****	*−0.229*	*−0.354****	*−0.194*
Race (Bl vs. W)	0.125**	0.227***	0.006	0.399**	*−0.060*	0.366	0.023	0.442
Total days deployed while married	*−0.006****	0.001	*−0.004****	*−0.003****	0.005***	0.007***	*−0.006****	*−0.014**
Moderators of deployment effects								
Age at marriage	0.0002***	0.000	0.0002***	0.0002***	*−0.000*	0.000	0.0003***	0.0004*
Gender (F vs. M)	0.002***	*−0.000*	0.002***	0.001	0.001**	0.0009	0.002***	*−0.003*
Children (yes vs. no)	*−0.001***	*−0.002****	*−0.001****	*−0.004****	*−0.001**	*−0.002*	*−0.002****	*−0.003*
Race (Bl vs. W)	*−0.0005**	0.000	*−0.000*	0.001	*−0.001*	*−0.001*	*−0.000*	0.002

Note: Entries in the table represent weights from a survival analysis in which all variables in each column were entered simultaneously. Positive weights indicate variables associated with increased risk of marital dissolution subsequent to deployment. Negative weights (italicized) indicate variables associated with reduced risk of marital dissolution subsequent to deployment

*$p<0.05$, **$p<0.01$, ***$p<0.001$

Table 2.2 Survival analysis results for Reserve Services

	Army		Navy		Air Force		Marines	
	Enlisted	Officer	Enlisted	Officer	Enlisted	Officer	Enlisted	Officer[a]
N	31,398	5,603	21,738	7,973	5,646	1,207	8,229	475
Demographic Variables								
Age at marriage	*−0.036***	*−0.050***	*−0.016***	*−0.046***	*−0.073***	*−0.189***	*−0.099***	–
Gender (F vs. M)	0.068	0.187	0.108	*−0.075*	*−0.092*	0.1627	0.173	–
Children (yes vs. no)	*−0.000*	0.124	0.190***	0.047	*−0.138*	0.461	0.339	–
Race (Bl vs. W)	0.130*	0.208	*−0.198***	*−0.203*	*−0.975***	1.024	*−0.368*	–
Total days deployed while married	*−0.004****	*−0.007***	*−0.002*	*−0.016****	*−0.006***	*−0.006*	0.000	–
Moderators of deployment effects								
Age at marriage	0.0001**	0.0002*	0.0003***	0.0003**	0.0002**	0.0005*	*−0.000*	–
Gender (F vs. M)	0.003***	0.002	0.003*	0.007***	0.003***	0.004	0.003	–
Children (yes vs. no)	*−0.002****	*−0.001*	*−0.001*	*−0.0014*	*−0.000*	*−0.007*	*−0.004***	–
Race (Bl vs. W)	*−0.001*	*−0.000*	*−0.0008*	0.000	0.002	*−0.001*	0.003*	–

Note: Entries in the table represent weights from a survival analysis in which all variables in each column were entered simultaneously. Positive weights indicate variables associated with increased risk of marital dissolution subsequent to deployment. Negative weights (italicized) indicate variables associated with reduced risk of marital dissolution subsequent to deployment

*$p<0.05$, **$p<0.01$, ***$p<0.001$

[a]Due to the small sample size, this model could not be estimated reliably

Table 2.3 Survival analysis results for National Guard Component

	Army		Air Force	
	Enlisted	Officer	Enlisted	Officer
N	54,082	5,091	11,731	1,423
Demographic variables				
Age at marriage	*−0.062***	*−0.069***	*−0.084***	*−0.167***
Gender (F vs. M)	0.305***	0.239	*−0.056*	*−0.1192*
Children (yes vs. no)	*−0.175**	*−0.458*	0.250	*−0.161*
Race (Bl vs. W)	*−0.504***	0.098	*−0.144*	*−1.047*
Total days deployed while married	*−0.004***	*−0.006**	*−0.005***	*−0.015***
Moderators of deployment effects				
Age at marriage	0.00009***	0.000	0.0003***	0.0004***
Gender (F vs. M)	0.002***	0.003*	0.003***	0.006*
Children (yes vs. no)	*−0.0009***	*−0.000*	*−0.002***	0.000
Race (Bl vs. W)	*−0.001*	0.000	*−0.002*	0.003

Note: Entries in the table represent weights from a survival analysis in which all variables in each column were entered simultaneously. Positive weights indicate variables associated with increased risk of marital dissolution subsequent to deployment. Negative weights (italicized) indicate variables associated with reduced risk of marital dissolution subsequent to deployment
*$p<0.05$, **$p<0.01$, ***$p<0.001$

Reserve Component and National Guard data are similar to the results obtained from the Active Component data.

Accounting for Marital Dissolution: Demographic Variables

Age at marriage. One of the most consistent results in demographic research in marital outcomes is the fact that individuals who are older when they enter marriage have a lower risk of dissolving the marriage (e.g., Kreider & Fields, 2001). Of the four demographic variables examined in these analyses, age at marriage had the most consistent associations with marital dissolution. Consistent with prior research, service members who were older when they entered marriage were at lower risk of dissolving the marriage, and this effect was significant in every service of every component of the military, with the exception of Air Force officers in the Active Component and Marine officers in the Reserve Component where the effect did not reach significance.

Gender. The next most powerful demographic variable was gender. Whereas news reports have emphasized the risks of divorce for male service members (e.g., Jaffe, 2005), these analyses revealed that, across ranks and across services of the Active Component, and in the Army National Guard, female service members are at significantly greater risk of experiencing marital dissolution than male service members (see also Karney & Crown, 2007). The one exception to this pattern is the result for active duty Army officers, where females appear to be at significantly

lower risk than males for experiencing marital dissolution. Within the Reserve Component and the rest of the National Guard, gender differences in risk of dissolution were not significant.

Presence of children. In civilian marriages, couples with children have a significantly lower risk of divorce than couples without children (Karney & Bradbury, 1995). Within the Active Component of the military, the same effect holds true among enlisted service members in all services, and among officers in the Army. Within the Reserve Component, differences between parents and non-parents reached significance only for enlisted members of the Navy, where the effect was reversed, that is, Navy reservists with children were at greater risk than Navy reservists without children. Within the National Guard, parents were at lower risk than non-parents among enlisted members of the Army, and the two groups did not differ among Army officers or within the Air Force.

Race. In the civilian population, rates of divorce are nearly twice as high for blacks than for whites (Bramlett & Mosher, 2002). Within the Active Component, these analyses revealed that risk of dissolution is significantly higher for blacks only in the Army (among enlisted and officers), and among Navy officers. Within the Reserve Component, blacks are at higher risk than whites among enlisted members of the Army, but are at significantly lower risk among enlisted members of the Navy and Air Force. There are no racial differences in risk of dissolution among reserve officers in any of the services. Finally, within the National Guard, race differences emerged only for enlisted members of the Army, where again blacks were at significantly greater risk than whites. Across all of these results, it is worth noting that racial differences, when they were significant, were still relatively small, and nowhere near the differences observed among civilians. Such results are consistent with other research on military families that suggests that racial differences in family outcomes are greatly reduced within the military as compared to among civilians (e.g., Lundquist, 2004).

In sum, analyses of the effects of demographic variables on risk of marital dissolution within the military replicated the results of similar analyses conducted on civilian populations, suggesting that the data examined here were reliable and the models specified correctly.

Accounting for Marital Dissolution: The Effects of Deployment

Controlling for the demographic variables, conventional wisdom and current models of stress and marriage predicted that time deployed would increase risk of marital dissolution in general, and that this effect would be strongest for the reserve components of the military, who are presumably less prepared for lengthy deployments. In fact, the direct association between the number of days deployed and subsequent risk of dissolution was significant in 15 out of the 20 models estimated in these analyses (see Tables 2.1–2.3). Two of these models revealed the expected effect. Specifically, among enlisted members and officers in the Active Component

Air Force, the longer that a service member was deployed while married, the greater the subsequent risk of marital dissolution. This is the effect that media reports led us to expect.

In the other 13 significant analyses, however, the effect of deployment on subsequent risk of marital dissolution was significant in the opposite direction. Specifically, for enlisted members of the Army, Navy, and Marines and for officers in the Navy and Marines in the Active Component, for enlisted members in the Army and Air Force and for officers in the Army and Navy in the Reserve Component, and for all services and ranks in the National Guard – in short, for the vast majority of the U.S. military – the longer that a service member was deployed while married, the *lower* the subsequent risk of marital dissolution. In these groups, deployment appears to enhance the stability of the marriage, and the longer the deployment, the greater the benefit.

It is worth nothing that, not only did the effects of being deployed run counter to predictions, but there was no evidence that the marriages of reservists were more negatively affected by deployment than were the marriages of active duty members. On the contrary, the only harmful effects of deployment were observed in the Active Component of the Air Force. Within the Reserve Component and National Guard, and even in the Reserve Air Force and Air Force National Guard specifically, time deployed was associated with consistently lower risk of marital dissolution, not higher.

Accounting for Marital Dissolution: Moderating Analyses

Age at marriage. Consistent with the idea that a couple's level of resources helps to buffer the effects of stressful experiences, we predicted that deployment would be especially likely to increase the risk of marital dissolution in the marriages of younger people, who presumably have had less time to accumulate resources. In fact, age at marriage proved a significant moderator of deployment effects in 14 out of 20 analyses. However, in each of these cases the nature of this moderation was in the opposite direction as expected. Specifically, for enlisted members of the Active Component Army, Navy, and Marines, for officers in the Active Component Navy and Marines, for enlisted members and officers in the Army, Navy, and Air Force Reserve Component, for enlisted members of the Army and Air Force National Guard, and for officers in the Air Force National Guard – in short, for the vast majority of the United States military – the marriages of those who were younger when they entered marriage benefited significantly more from deployments than the marriages of those who were older.

Gender. We had no a priori predictions for how gender might moderate the effects of deployment on risk of dissolution, but gender nevertheless proved a significant moderator in 12 out of 20 analyses. In every case, the nature of the moderating effect was the same: time deployed reduced the risk of marital dissolution significantly less for female service members than for males. This effect reached

significance among enlisted members of all service of the Active Component, enlisted members of the Army, Navy, and Air Force Reserve Component, officers in the Navy Reserve Component, and all ranks and services of the National Guard.

Presence of children. To the extent that children at home put added pressure on the nondeployed spouse, we predicted that deployment would have a stronger association with marital dissolution for parents than for non-parents. In fact, parental status proved a significant moderator of the deployment effect in 10 out of 20 analyses, but again the nature of the moderation was in the opposite direction as expected. Specifically, time spent deployed while married reduced risk of marital dissolution more strongly for parents than for service members without children. The effect was significant for enlisted members in all services of the Active Component, for officers in the Active Component Army and Navy, for enlisted members of the Army and Marine Reserve Component, and for enlisted members of the Army and Air Force National Guard.

Race. We made no a priori predictions about how race would moderate deployment effects on marital dissolution, but prior research suggesting that the military tends to diminish racial differences in family outcomes would argue against the likelihood of race playing an important moderating role. Indeed, race moderated the deployment effect in only 2 of the 20 analyses. Among enlisted members of the Active Component Army, time deployed reduced risk of marital dissolution significantly more for blacks than for whites. Among enlisted members of the Marine Reserve, the effect was significant in the opposite direction, such that deployment reduced risk of marital dissolution less for blacks than for whites.

Discussion

Rationale and Summary of Results

Most people who write or speak publicly about military marriage think that they understand how military marriages have been affected by deployment. Informed by a broad literature documenting the effects of stress on marriage, the widespread assumption is that the effects of deployment on marriage are severe, immediate, and negative, such that couples who have been separated by deployment should be at higher risk of divorcing after they are reunited (e.g., Alvarez, 2006). Although prior research has found scant evidence for this effect, those studies have been ill equipped to address the question, relying on small samples or focus groups and self-reports from affected spouses. Thus, belief in the negative effects of deployment persists, and has raised concerns that the heightened pace of deployments since 2001 may have harmed military families.

The present study evaluated the effects of deployment on risk of marital dissolution in military marriages using the strongest methods that have been applied to this question to date. Rather than sample from the military population, these analyses

addressed data on the entire population of the U.S. military. Rather than relying on self-reports, these analyses addressed detailed deployment histories provided by the Department of Defense. Rather than pooling data across time, these analyses examined a longitudinal data set with survival analyses that controlled for the length of each deployment and the time that each service member had been married prior to deployment. Moreover, these analyses controlled for (and replicated the effects of) other demographic variables that have been associated with marital dissolution in prior research on civilian populations.

The results of these analyses indicate that conventional wisdom about the effects of deployment on military marriage may be wrong. Only within the Active Component Air Force were longer deployments associated with greater risk of ending a marriage. For all other services in the Active Component, and for all services of the Reserve Component and National Guard, the effects of deployment were either insignificant or beneficial, that is, those deployed more days while married were at significantly lower risk of subsequent marital dissolution. Moreover, deployment had the greatest effects for those who would seem to be the most vulnerable, that is, those who married younger, and those with children in the home.

Understanding the True Effects of Deployment

In general, every one of the hypotheses that we derived from prior research on stress and marriage was refuted. Yet deployment has been shown to have the predicted negative effects on service members' physical and mental health (Bray et al., 2006; Hoge et al., 2006). How is it that we failed to observe similar negative effects on the stability of military marriages? What does the prevailing wisdom overlook?

There are several possible answers to these questions. First, in emphasizing the acknowledged negative effects of deployment, the prevailing wisdom fails to recognize that deployment has positive aspects as well. For example, focus groups exploring the effects of deployment on service members indicate that many service members find deployments meaningful and fulfilling as well as stressful (Hosek et al., 2006). Time spent deployed provides some service members with a sense of using their training to further an important national goal, in contrast to time spent serving at home. For those considering a career in the military, deployments provide opportunities for advancement that are unmatched by opportunities available while serving at home. More concretely, being deployed is associated with a higher level of pay, and thus a higher level of family income, and this holds true for both Active and Reserve Components (Hosek et al., 2006; Klerman, Loughran, & Martin, 2006; Loughran et al., 2006). Although the data available in service personnel records do not allow a direct assessment of the relative costs and benefits accumulated by individual members, the overall pattern of results obtained here suggests that, for the majority of deployed service members, the concrete benefits of deployment may compensate for the emotional costs. The results of the moderating analyses are

consistent with this idea. If the effects of deployment on marriage are driven mostly by the income and career implications of deployment, then these effects should be greatest for couples with the most to gain. Indeed, these analyses suggest that the marriages of younger couples and couples with children benefit more from deployment than those of older married female service members. Similarly, male service members, over 90% of whom leave behind a spouse that they need to support when they are deployed, benefit more from deployment than female service members, nearly 50% of whom are married to other service members, who presumably are less in need of support.

Second, current theories of stress and marriage have yet to elaborate on what may be a crucial distinction between normative and non-normative stressors. All of the stressors that prior research has identified as detrimental to marriage (e.g., unemployment, chronic illness, natural disasters) are unexpected, largely uncontrollable, and counter-normative. One reason that military couples endure the stresses and demands of military service as well as they do may be that, for military marriages, deployments are a normative stressor, that is, a challenge that is consistent with spouses' expectations for themselves and for the marriage. Military couples expect to endure deployments at the outset of the marriage, and so may be prepared when the time comes. Some evidence is consistent with the idea that couples who expect stress may be more resilient. In a study of 407 male Army members and their wives, Pittman (1994) found that the number of hours that husbands spent at work had no direct associations with either spouses' ratings of marital satisfaction. Instead, time spent at work affected marital satisfaction indirectly, through its direct association with spouses' evaluation of the balance between work and family demands. Spouses who expected that the military would make high demands on the husband maintained their satisfaction with the marriage regardless of the hours that the service member spent away from home. Such results raise the broader possibility that military spouses are generally able to keep the demands of military service in perspective, accepting the stress as an unavoidable aspect of their lives, and making allowances for it that maintain the marriage. Thus, the effects of deployment on marriage may resemble the effects of the transition to parenthood, another event that couples describe as profoundly stressful (Cowan & Cowan, 1992), but that is associated with lower rates of marital dissolution (Karney & Bradbury, 1995).

Third, by focusing on stressful events, observers of military marriages may have overlooked the role that military institutions may play in supporting military marriages and buffering military families from the effects of stress. When civilian couples encounter stressful events and circumstances, they may rely on what sources of support are available to them, and these sources vary across couples. In contrast, military couples, and couples in the Active Component in particular, have access to specific institutionalized sources of support that are unavailable to civilians. At the most concrete level, the military provides married service members with access to child care, health care, and housing supports (e.g., Janofsky, 1989; Lundquist & Smith, 2005). More broadly, military families, especially those living on or near bases, form a supportive community for each other, and the ability to rely on that community has been shown to facilitate positive outcomes as well (Bowen,

Mancini, Martin, Ware, & Nelson, 2003; Pittman, Kerpelman, & McFadyen, 2004). Even more broadly, the current political environment, in stark contrast to the environment that veterans of Vietnam returned to, encourages all citizens to express unalloyed support for service members and their families, regardless of their opinions about the conflict in which they are serving. As Hill's (1949) original model suggested, and as subsequent research has confirmed (Karney et al., 2005), when couples have the resources to cope with stress effectively, they may emerge from a stressful period intact or even closer than before. The military may be a context that provides those resources, protecting military marriages from the negative fallout of service members' deployments.

Understanding the Continued Belief in the Negative Effects of Deployment

If we were unable to find much evidence for negative effects of deployments on marriages using the best methods that have been applied to this question to date, why is it that the belief in these effects continues to be so widespread? It is possible that military families, and the public at large, are attending to several aspects of deployment effects not addressed in these analyses.

First, these analyses addressed only a single outcome, marital dissolution. There may be other significant costs to deployments that are highly salient to military families but that are not accessible in the data examined here. Most notably, to extend the analogy between deployments and the transition to parenthood, deployments may predict declines in marital satisfaction even as they reduce risk of marital dissolution. The data examined here do not address processes within marriages at all, but it is hard to imagine that the way military couples communicate and interact is not greatly affected by deployments (although there is no reason to assume that the effects of deployment on these processes are necessarily negative; cf. Fincham & Bradbury, 1988; Tesser & Beach, 1998). Recent evidence also suggests that deployments have costs for the children of deployed parents (e.g., Huebner & Mancini, 2005; Lyle, 2006), and these costs are also not assessed by the data examined here. For military couples, these costs may be highly salient, or more salient than the structural benefits that may keep military marriages intact. To evaluate these other potential costs of deployment for military families, future research must examine a broader range of outcomes than are available in the personnel records examined here.

Second, as noted earlier, these analyses address only those marital dissolutions that occurred while service members were part of the military and reporting their marital status to military personnel offices. Given reports that military families are feeling an immediate negative effect of deployments while still in the service (e.g., Jaffe, 2005), it was reasonable to address effects over this limited span of time. Nevertheless, it remains possible that there may be long-term costs of deployment that emerge after service members have separated from the military or even years after couples are reunited. Military families may be aware of such long-term costs,

but if they occur they were not represented in these data. Without longitudinal research that follows military families after they have separated from the service, the long-term implications of deployment for service members and their families remain an open question.

Third, to control for length of time married prior to deployments, these analyses examined only those couples who married after September 2001, the period for which detailed deployment histories were available. All of these couples entered marriage knowing that the deployments in Afghanistan and Iraq were underway, and may have expected and prepared for them. In contrast, couples who were married prior to that time may not have expected the increased demands they have faced since that date, and may have experienced deployment differently. These couples, omitted from the analyses described here, may be the ones most adversely affected by deployments.

Finally, these analyses only examined divorces that occurred in the first 3 years of the current conflicts (i.e., through 2005). This is a period during which news reports suggested that military marriages had already been damaged by the stresses of deployment, and thus is a reasonable interval to examine. Nevertheless, the conflicts in Iraq and Afghanistan have continued since then, and the pace of deployments remains high. Thus, although the analyses described here found little evidence for the predicted effects of deployment on divorce in the short-term, as more time passes and more data accumulate, the predicted effects of deployment on divorce may yet emerge.

Conclusion

Whereas civilian couples who encounter stress tend to be at higher risk of dissolving their marriages, most military couples separated by deployment are at decreased risk of dissolving their marriages, and this effect is greater the longer the service member is deployed. Thus, in the face of a stressor with demonstrable negative consequences in other domains, military marriages reveal an unexpected and noteworthy resilience. Given that the military tends to recruit from the more vulnerable segments of the population, at least in terms of level of education and prospects for non-military employment (Bachman, Segal, Freedman-Doan, & O'Malley, 2000), the source of this resilience is unlikely to lie entirely within military couples themselves. Instead, the answer may lie in supportive institutions and services (e.g., health care, housing supports, social networks) to which military couples have access. To the extent that the specific sources of resilience in military marriages may be identified, the military may have important lessons for those invested in promoting similar levels of resilience among civilian couples.

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Chapter 3
Couple Functioning and PTSD in Returning OIF Soldiers: Preliminary Findings from the Readiness and Resilience in National Guard Soldiers Project

Christopher R. Erbes

Abstract Addressing the mental health needs of returning service members who have served in Iraq and Afghanistan, and their family members, requires careful consideration of the inter-relationships between post-traumatic stress disorder (PTSD) and family functioning. This chapter summarizes the theoretical and empirical literature regarding PTSD and couple relationships. It then presents findings from two studies that are part of the Readiness and Resilience in National Guard Soldiers (RINGS) project. The first study examined the importance of pre- and during deployment family concerns on post-deployment PTSD symptoms in a group of 432 National Guard soldiers. The second examined the relationship between PTSD symptoms and soldier- and partner-reported couple functioning in a sample of 49 Operation Iraqi Freedom National Guard soldiers and their partners.

As service members from all branches of the military return home from combat deployments to Iraq (Operation Iraqi Freedom or OIF) and Afghanistan (Operation Enduring Freedom or OEF) they are faced with multiple stressors of both an intrapersonal and interpersonal nature. On the intrapersonal level, extant studies have found screening rates of mental health impairment to be as high as 15% for both post-traumatic stress disorder (PTSD) and depression (see Ramchand, Karney, Osilla, Burns, & Calderone, 2008; Schell & Marshall, 2008; for reviews). Importantly, these rates actually increase in the first months of a service member's return, particularly for National Guard and Reserve Component personnel (Milliken, Auchterlonie, & Hoge, 2007). On the interpersonal side, 14% of Active Component and 21% of National Guard and Reserve Component service members report concerns with interpersonal conflict 6 months following their return from deployment. These interpersonal concerns also show a trend of increasing over time (Milliken et al., 2007). Given established links between interpersonal functioning

C.R. Erbes (✉)
University of Minnesota Medical School, Department of Psychiatry, Minneapolis Veterans Affairs Medical Center, Minneapolis, MN 55417, USA
e-mail: Christopher.erbes@va.gov

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and individual distress, these two areas of distress in returning service members are likely to be interrelated. This chapter will examine the potential interactive role of distress on the individual and marital/couple level when considering one of the more prevalent and pernicious sequelae of combat deployment, PTSD. Data from the Readiness and Resilience in National Guard Soldiers (RINGS) study will be examined as they relate to links between PTSD and couple functioning.

Post-Traumatic Stress Disorder (PTSD)

PTSD is a psychiatric condition in which an individual develops symptoms in response to confrontation by a traumatic stressor involving actual or threatened death, serious injury, or loss of physical integrity that is accompanied by a sense of intense fear, helplessness, or horror (American Psychiatric Association, 2000). PTSD involves a number of symptoms, organized into symptom criteria in the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV-TR; APA, 2000). Criterion A requires exposure to a traumatic stressor. Criterion B involves suffering intense re-experiencing symptoms in which a person relives the trauma in thoughts, dreams, or even perceptions. Criterion C involves avoidance symptoms such as avoiding trauma reminders and conversations as well as exhibiting more general affective numbing and withdrawal. Criterion D includes hyperarousal symptoms including anger, sleep problems, impaired concentration, and constant vigilance. In cases of PTSD, these symptoms are present for at least 30 days (Criterion E) and cause clinical impairment (Criterion F). Studies have shown that PTSD arising from combat trauma is related to some of the most lasting and severe deficits in quality of life and overall functioning (Prigerson, Maciejewski, & Rosenheck, 2001). The high prevalence rates of PTSD identified in returning service members are of great concern. Studies on the prevalence and course of PTSD provide several intriguing questions that suggest interpersonal functioning may play a role in trauma recovery.

While exposure to trauma is relatively common in our society (with rates of about 50% in the United States; Kessler et al., 1995), PTSD is not (lifetime prevalence rates are about 3.6% for men and 9.7% for women; Kessler et al., 2005). In many cases, symptoms of PTSD may be present immediately following a trauma but can fade over time. For example, studies of sexual and nonsexual assault survivors presenting at an emergency room demonstrated that while almost all of those interviewed met criteria for PTSD shortly after the assault (with the exception of the 30-day duration criterion, due to the immediacy of the assessments), fewer than half continued to meet criteria 6 months after the event (Riggs, Rothbaum, & Foa, 1995; Rothbaum, Foa, Riggs, Murdock, & Walsh, 1992). The question then becomes this: what allows a person to be resistant (i.e., never suffer from) or resilient (i.e., spontaneously recover from) to trauma-related pathology such as PTSD (Layne, Warren, Watson, & Shalev, 2007). Research and theory have provided some intriguing possible answers for these questions. Of note, two meta-analyses of the literature on risk factors for PTSD found that events occurring following trauma exposure play an

important role in predicting PTSD. Perceptions of social support were among the most robust negative predictors for PTSD (Brewin, Andrews, & Valentine, 2000; Ozer, Best, Lipsey, & Weiss, 2003) in both analyses and the presence of post-trauma stressors also had a large effect size (Brewin et al., 2000). Although these findings are based largely on cross-sectional studies, they imply that events in a person's environment after a traumatic event play a role in determining the likelihood and/or severity of PTSD. In addition to these findings, theories of the development of PTSD (e.g., Foa & Rothbaum, 1998; Janoff-Bulman, 1992) have consistently indicated that a person's interpersonal environment following trauma can affect their meaning-making processes and thus their course of adjustment.

PTSD and the Family

There are several reasons to consider the role of family functioning in the development and maintenance of PTSD and, conversely, the role of PTSD in family functioning. First, as mentioned, social support following a traumatic event is a strong negative predictor of PTSD and couple relationships are a primary source of support in adulthood (Beach, Martin, Blum, & Roman, 1993). Recent studies have suggested that support can play a protective role in the months following a trauma, but also that PTSD symptoms predict deteriorating social support in later phases of the disorder (Kaniasty & Norris, 2008). Second, PTSD is associated with reports of impaired family and marital functioning in numerous studies (see Galovski & Lyons, 2004, for a review). Third, there are some findings suggesting that family functioning can predict response to psychotherapy for the treatment of PTSD (Tarrier, Sommerfield, & Pilgrim, 1999). Finally, there are numerous studies demonstrating that partners of those suffering from PTSD tend to report higher levels of psychiatric distress themselves (e.g., Calhoun, Beckham, & Bosworth, 2002). It is likely that couple functioning and PTSD are reciprocally related, with negative family interactions bolstering symptoms of PTSD and PTSD increasing negative family interactions. For purposes of clarity, we will discuss these two pathways of causality separately.

The Effects of PTSD Symptoms on Couple Relationships

The link between PTSD and negative couple functioning has been well established in the literature with both civilian and military samples (Galovski & Lyons, 2004). Data on PTSD and couple functioning following combat deployments comes from veterans of World War II (Cook, Riggs, Thompson, Coyne, & Sheikh, 2004), Vietnam (Jordan et al., 1992), wars in Israel (e.g., Dekel, Enoch, & Solomon, 2008; Solomon, Dekel, & Zerach, 2008; Solomon, Dekel, Zerach, & Horesh, 2009), and more recently OEF and OIF (Goff, Crow, Reisbig, & Hamilton, 2007; Renshaw, Rodrigues, & Jones, 2008). In a sample of 331 World War II ex-prisoners of war

(POWs), Cook et al. (2004)) found that 31% of ex-POWs with PTSD reported relationship problems on the Dyadic Adjustment Scale (DAS) as compared to 11% of those without. Jordan et al. (1992) found that 55% of Vietnam veterans diagnosed with PTSD reported high levels of marital problems as opposed to 9% of veterans without PTSD. A similar pattern was found when looking at spouse/partner reports of marital satisfaction, 40% of those with a veteran with PTSD reported high levels of marital problems as opposed to 18% of those with veterans without PTSD. In a sample of 708 partners of Dutch soldiers who had served in peacekeeping actions, Dirkzwager, Bramsen, Adèr, and van der Ploeg (2005) found that partners of soldiers with higher levels of PTSD reported decreased marital satisfaction. Partners of soldiers who met full screening criteria for PTSD reported the lowest levels of marital satisfaction.

Study of the relationship between PTSD and couple functioning in OEF/OIF returnees is relatively new, but results are consistent with earlier findings. Goff et al. (2007) using a convenience sample of 45 post-deployment OIF service members and their partners, demonstrated that soldier ratings of PTSD (on the Purdue PTSD Scale – Revised) and of more general trauma symptoms (on the Trauma Symptom Checklist – 40) were negatively related to their reports of relationship satisfaction on the DAS ($r = -.45$ and -0.58, respectively). In contrast, only service member reports of general trauma symptoms on the Trauma Symptom Checklist were related to spouse ratings of relationship satisfaction ($r = -0.32$). Similarly, Renshaw et al. (2008) found that soldier reports of PTSD symptoms were related to partner reports of marital satisfaction in a sample of 49 Army National Guard OIF veterans and their partners. Importantly, an interaction was present so that this relationship emerged only when spouses perceived low levels of combat exposure. When spouses perceived low levels of combat exposure, there was a moderate negative relationship between PTSD as assessed on the PTSD Checklist and marital satisfaction as measured by the Relationship Assessment Scale (partial $r = -0.46$) but this relationship was not present when spouses perceived a higher level of combat exposure. The implication is that when partners were able to attribute changes in the soldier to combat experiences, they found it less distressing or more tolerable than when they made other, perhaps more internal, attributions. Whether this buffering effect of perceived reasons for behavioral change persists over months and years in a relationship remains to be seen.

Several studies have examined what aspects of PTSD may be most harmful to couple relationships. When analyzing the subscales of the Trauma Symptom Checklist, Goff et al. (2007) found that dissociation, sleep disturbance, and sexual dysfunction were uniquely predictive of service member reports of couple distress and that soldier reports of dissociation were uniquely predictive of partner reports of couple distress. The majority of studies in other veteran samples have focused on clusters of PTSD symptoms, including re-experiencing, hyperarousal, trauma-specific avoidance, and numbing factors. Numbing consists of more generalized avoidance symptoms of PTSD including affective numbing, social isolation, and loss of interest or pleasure in activities (Riggs, Byrne, Weathers, & Litz, 1998). Several studies have found that numbing symptoms contribute uniquely to the

prediction of reports of marital distress over and above other symptoms of PTSD (e.g., Cook et al., 2004; Riggs et al., 1998). These findings suggest that the more generalized avoidance may be particularly harmful to couple relationships. A separate group of studies have examined which aspects of PTSD are most linked to aggression in general, and partner violence in particular, which are both elevated among veterans with PTSD (Byrne & Riggs, 1996; Jordan et al., 1992). Not surprisingly, these studies have found specific links between hyperarousal symptoms, which include anger and irritability, and aggressive behaviors (e.g., Taft et al., 2007). It is important to keep in mind that these findings have mostly emerged when examining a single informant, so that the soldier or veteran reports on their own PTSD symptoms and their view of relationship functioning.

The Effect of Couple Relationships on PTSD

To date most studies in the area of PTSD and couple relationships have been cross-sectional in nature, and have tended to attribute the direction of causality leading from PTSD symptoms to family impairment. This is a reasonable assumption when studies are taking place years after trauma exposure. In such situations, couple relationships have either been confronted with PTSD for many years or may have actually formed following trauma exposure with PTSD already present. However, spouses and partners of service members returning from Iraq and Afghanistan are present and confronted by the effects of trauma relatively soon after trauma exposure. As such, they may play a role in the expression, interpretation, management, and ultimately the course of trauma symptoms. In other words, when considering couple relationships and PTSD in returning service members, it becomes important to reconsider if couple relationships can influence whether and to what extent a service member's reactions to trauma exposure include long-term symptoms of PTSD. Research investigating longitudinal relationships of the effect of couple functioning on PTSD symptoms is sorely lacking. Consideration of the role of family environment in resilience or risk for PTSD in the face of trauma exposure should be informed by current theories regarding the development and maintenance of the disorder.

One of the most commonly cited models for the development and maintenance of PTSD is Foa and Kozak's (1986) emotional processing theory. Emotional processing theory places emphasis on the roles of avoidance and cognition following trauma exposure. Avoidance symptoms, such as avoiding reminders or conversations and thoughts related to the trauma, are believed to prevent emotional processing and the development of realistic cognitive appraisals following a traumatic event (Foa & Rothbaum, 1998). Recently, theoretical and empirical work has expanded the conceptualization of avoidance discussed in Foa and Kozak's model to include a broader category of behaviors that are referred to as experiential avoidance (e.g., Orsillo & Batten, 2005). Experiential avoidance is defined as a process by which individuals engage in strategies designed to alter the frequency or experience of private events, such as thoughts, feelings, memories, or bodily sensations

(Hayes, Wilson, Gifford, Follette, & Strosahl, 1996). Thus, experiential avoidance encompasses not only the specific avoidance symptoms of PTSD but also other behaviors that serve the function of avoiding distressing or unwanted experiences. Behaviors like alcohol abuse (which is highly comorbid with PTSD; Kessler et al., 1995), excessive involvement in work, excessive thrill seeking, or chronic video game playing may all serve the function of experiential avoidance. Experiential avoidance is important in the context of couple functioning because many behaviors that serve the function of experiential avoidance lie outside the scope of the diagnostic criteria for PTSD but, at the same time, may carry grave implications for couple functioning.

Cognitive appraisals, including beliefs about the self, world, and others and specific evaluations of events and experiences, have also been discussed as helping to maintain symptoms of PTSD. Cognitive appraisals include negative thoughts and inferences about the traumatic event itself, about the self in relation to the event, about the meaning of early symptoms and reactions to the event, and about the reactions of others (Foa & Rothbaum, 1998; Janoff-Bulman, 1992). Such appraisals contribute to a core belief of the self being in real and constant danger (Ehlers & Clark, 2000) and have been found to predict the development and maintenance of PTSD symptoms in numerous populations (Dunmore, Clark, & Ehlers, 2001). Foa and Rothbaum (1998) have suggested that such negative appraisals can impede emotional processing of traumatic events, and studies have shown that negative appraisals of post-traumatic reactions are associated with (ineffective) avoidance coping strategies such as thought suppression (Steil & Ehlers, 2000).

From this perspective couple functioning can play a role in the development or maintenance of PTSD to the extent to which it promotes or inhibits experiential avoidance and to the extent to which it confirms or challenges negative cognitive appraisals. A committed couple relationship can represent a major source of encouragement for engagement on both an emotional and practical level. Successful relationship functioning often requires emotional engagement and intimacy (Gottman & Levenson, 1986) as well as shared positive activities and successful role functioning. If an intimate relationship encourages or requires an individual to engage in intimacy and in positive activities, it also challenges experiential avoidance. For example, if a service member returning from the war returns to a partner who is engaging and encourages the veteran, directly or indirectly, to be involved in family activities and interactions, to get out of the house with them, or to attend to practical responsibilities, this may challenge or decrease some of the experiential avoidance that can foster the disorder. In contrast, if a service member comes home to no family (and thus no family engagement or commitments), or to a family that is characterized by conflict or emotional distance, avoidant behavior may occur more easily or even be fostered.

Similarly, several clinical theories have posited that the social environment, including especially the family, can play a role in challenging or rebuffing trauma-related cognitions (e.g., Ehlers & Clark, 2000; Foa & Rothbaum, 1998; Janoff-Bulman, 1992). During a combat deployment, a person is likely to be confronted with traumatic events that challenge established ways of thinking about themselves, the world, and others. If, following that deployment, interactions with others promote a sense of safety, efficacy, and trust then the negative attributions related to the trauma

and the self may decrease. In contrast, if a person comes home from a war to a strained or distant relationship that confirms beliefs that he or she is damaged, incapable of closeness, or permanently and tragically different from others it may reinforce the cognitions that underlie or sustain PTSD. Furthermore, if a service member returns from a combat deployment to a household that is, likewise, "combative," with frequent arguments, conflicts, or even physical violence this may serve to reinforce beliefs that the world is not a safe place and that others cannot be trusted.

OEF/OIF, Couple Relationships, and PTSD

The wars in Iraq and Afghanistan represent unique challenges and opportunities for researchers and clinicians who work with families and trauma. OEF/OIF has made use of National Guard and Reserve Component members on an unprecedented scale. This is significant because National Guard and Reserve personnel face unique challenges in the context of a combat deployment. These personnel, unlike their Active Component counterparts, leave behind families and jobs that are not necessarily expecting, organized around, or supported during multiple deployments. A 1-year combat deployment is entirely distinct from the "1 weekend a month, 2 weeks a year" that many National Guard members, and their families and civilian employers, may have envisioned when the service member enlisted. National Guard and Reserve members and families may also have different levels of support from their peers and communities as well. In an Active Component situation, entire peer groups of families and professional colleagues (i.e., fellow service members and their families) are familiar with and supportive of extended deployment operations. In contrast, many National Guard and Reserve members and families can face the stress of a deployment in relative isolation. Thus, it is important to study how National Guard and Reserve members and their families interact and cope with the stresses of combat deployments.

OEF/OIF also presents other important opportunities for study. The majority of prior studies of trauma and family functioning have been with trauma survivors many years after their traumatization. In addition, such studies are often cross-sectional. This precludes a careful study of the interactive roles of family and individual distress in the early months following a combat deployment. It is also possible that the nature of the relationships between couple or family functioning and PTSD vary over time, as has been found in some studies of social support (e.g., Kaniasty & Norris, 2008). Thus, longitudinal studies of OEF/OIF National Guard and Reserve personnel are necessary and potentially illuminating.

Preliminary Findings from the RINGS Project

The RINGS project is an ongoing collaboration between the Minneapolis Veterans Affairs Medical Center, the University of Minnesota, and the Minnesota Army National Guard (MNARNG). The MNARNG has facilitated access to soldiers

before, during, and after multiple deployments to Iraq as well as in training contexts. The overall goal of the RINGS research program is to examine intra-individual (e.g., personality, history, and biological) and extra-individual (e.g., family functioning, occupational status, and other environmental factors) factors that promote resilience and recovery in the face of combat deployments for National Guard troops. A secondary goal is to use the information obtained to develop interventions for promoting well-being in returning soldiers. One focus of RINGS is the study of contextual or interpersonal factors that may predict resilience in the face of combat deployment. Two sets of analyses will be presented here as initial evaluations of the relationships between family/couple functioning and PTSD in National Guard soldiers deployed to OIF. The first involves a cohort of soldiers who were evaluated prior to a combat deployment and within 6 months of their return from deployment. The second involves a separate, smaller group of National Guard soldiers, and their spouses, who participated in a study within a year of the soldier's return from Iraq.

RINGS Pre-deployment Cohort: The Role of Family Concerns

The most intensively followed RINGS cohort involves a group of 522 National Guard soldiers who were given measures of common risk and resilience 1 month prior to an extended (16 month) deployment to Iraq (Time 1). Three months following their return from deployment, the cohort was mailed questionnaires on these constructs and common outcomes of combat deployments (Time 2). Time 3 data collection, again with mailed surveys, took place 1 year following their return, and Time 4 will take place 2 years following their return. A subsample also completed structured clinical interviews at Time 2. This chapter will focus on self-report results using pre-deployment and Time 2 post-deployment data. Details of the methodology and measures are provided in other publications (Polusny et al., 2009; Polusny et al., in press) and are summarized here.

As described by Polusny et al., we administered a battery of questionnaires to a sample of National Guard troops 1 month prior to their deployment after completing 6 months of active duty training. Soldiers were volunteers and were not compensated for their participation due to Department of Defense regulations. Soldiers completed a variety of questionnaires including a demographics form, measures of current mental health status, and commonly identified risk and resilience factors. Soldiers were deployed to Iraq in March 2006. While deployed, soldiers and families received word that troops would be extended 4 months, resulting in a 16-month deployment to Iraq and a total of 22 months away from home (including their 6 months of training). About 3 months after their return, soldiers were mailed follow-up surveys, along with a $50 incentive. Using standard survey methodology (see Polusny et al., in press), our overall response rate was 81% ($N=424$).

Participants

Pre-deployment participants ($N=522$) represented approximately 20% of the deploying Brigade Combat Team from which they were sampled. They were quite similar, demographically, to the larger brigade. For example, 89% of the pre-deployment participants vs. 91% of the brigade were male; 92 vs. 94% were Caucasian, 91 vs. 90% were enlisted; 46 vs. 41% were married; and 60 vs. 65% were between age 18 and 29. Twenty-eight percent of the sample had completed high school only, 42% had some college credit, and 30% had a college degree. Participants' average deployment length was 16.29 months (SD = 2.98) and the mean age was 31.91 (SD = 8.78). Time 2 responders and nonresponders did not differ significantly in terms of gender, ethnicity, or pre-deployment PTSD. However, those completing post-deployment surveys were slightly more likely to be officers, $\chi^2(1, N=522)=4.43$, $p=0.035$, married, $\chi^2(1, N=522)=10.65$, $p=0.001$, and older, $F(1, 520)=19.88$, $p<0.001$, than the nonresponders.

Measures

Pre- and post-deployment surveys included a wide range of measures of potential risk and resilience factors as well as mental health outcomes and global functioning. The measures included in the present analyses are summarized in Table 3.1. The PTSD Checklist (PCL; Weathers, Litz, Herman, Huska, & Keane, 1993) is a 17-item

Table 3.1 RINGS pre-deployment cohort measurement schedule

	Time 1 pre-Deployment	Time 2 post-Deployment
Mental health outcomes		
PTSD (PCL)	X	X
Demographics		
Age	X	
Gender	X	
Rank (enlisted yes/no)	X	
Risk and resiliency (DRRI)		
Prior stressors	X	
Childhood family environment	X	
Preparedness	X	X
Deployment (unit) social support	X	X
Concerns about life/family disruptions	X	X
Combat exposure		X
Perceived threat		X
Aftermath of battle		X
Difficult living/working environment		X
Post-deployment social support		X
Post-deployment stressors		X

PCL PTSD Checklist; *DRRI* Deployment Risk and Resilience Inventory

self-report measure of PTSD with items that mirror the symptom criteria for PTSD in the DSM-IV. The PCL has established internal consistency reliability and concurrent validity with other self-report measures and clinical interviews (Weathers et al., 1993). The Deployment Risk and Resiliency Inventory (DRRI; King, King, & Vogt, 2003) is an ecologically valid self-report measure of previously identified risk and resiliency factors for adjustment following combat deployments. The DRRI subscales have demonstrated reasonable to high levels of internal consistency reliability, discriminate validity, and criterion-related validity through associations with indicators of mental and physical health among Gulf War I veterans (Vogt & Tanner, 2007).

DRRI Subscales administered prior to deployment include Prior Stressors (such as previous trauma exposure), Childhood/Family Environment (assessing quality and closeness in the family of origin), perceived Deployment (i.e., unit) Social Support, perceived (military) Preparedness, and Concerns About Life/Family Disruptions. Subscales administered post-deployment included Combat Experiences (frequency of various combat experiences), Perceived Threat (to one's life during deployment), Aftermath of Battle (e.g., being exposed to the injured or dead), Difficult Living/Working Environment (e.g., concerns with heat, housing, workload), Post-Deployment Social Support (perceived support from others on homecoming), and Post-Deployment Stressors (such as economic, occupational, or other stressors). The Concerns About Life/Family Disruptions, Preparedness, and Deployment Social Support scales were also completed again at post-deployment. These three subscales were thus given in two versions. The pre-deployment version was modified slightly from the original DRRI wording to reflect how a soldier felt at the moment (i.e., how concerned, prepared, supported is the respondent feeling right now). At post-deployment, the original, retrospective version of the scale was given (i.e., how concerned, prepared, concerned did they feel during their prior deployment). The Concerns About Life/Family Disruptions subscale contains four items relating to concerns about job issues (e.g., "I am concerned about missing out on opportunities to start a career while I am away") and ten items relating to concerns about family (e.g., "I am concerned about harming my relationship with my spouse/significant other" and "I am concerned about my inability to help my family or friends if they have some type of problem").

Analyses and Results

The prediction of Post-Deployment PTSD by pre-, during-, and post-deployment predictors was assessed through hierarchical multiple linear regression. The first block of analyses included demographic variables, pre-deployment PTSD, and DRRI subscales that were assessed pre-deployment. The second block included all remaining measures administered post-deployment. Total scores on the PCL served as the dependent variable. To control for strong intrapredictor correlations between pre- and post-deployment scales, all post-deployment scales were residualized on the set of pre-deployment predictors prior to being entered into the regression model. Missing data was handled through list-wise deletion, leaving a final *N* of

Table 3.2 Multiple linear regression analysis predicting post-deployment PTSD

Predictor	Beta	Bivariate correlation	Partial correlation
Pre-deployment			
PTSD Checklist	0.26[c]	0.38	0.23
Gender	0.10[a]	0.14	0.10
Age	–0.10[a]	–0.10	–0.09
Rank (enlisted Y/N)	0.02	0.09	0.02
Concern for life/family disruption	0.11[b]	0.24	0.10
Deployment social support	0.10[a]	–0.12	0.08
Childhood family environment	0.00	–0.16	0.00
Preparedness	–0.13[b]	–0.22	–0.11
Prior stressors	0.24[c]	0.30	0.21
Post-deployment			
Preparedness	0.04	–0.08	0.03
Difficult living/work environment	0.02	0.22	0.02
Concern for life/family disruption	0.08[a]	0.18	0.07
Deployment social support	–0.04	–0.06	–0.04
Perceived threat	0.06	0.24	0.05
Combat experiences	0.19[c]	0.29	0.15
Aftermath of battle	0.07	0.25	0.06
Post-deployment social support	0.33[c]	0.37	0.32
Post-deployment stressors	0.02	0.14	0.02

[a] $p < 0.05$
[b] $p < 0.01$
[c] $p < 0.001$

388 (i.e., 91% of the sample had complete data on all variables). The final model is summarized in Table 3.2. As a whole, pre-deployment predictors accounted for 24% of the variance in post-deployment PTSD (R^2 change = 0.24, $F[9, 378] = 13.25$, $p < 0.001$). Post-deployment predictors accounted for an additional 24% of the variance (R^2 change = 0.24, $F[9, 369] = 18.52$, $p < 0.001$). The final model yielded and Adjusted R^2 of 0.45 ($F[18, 369] = 18.64$, $p < 0.001$). Pre-deployment predictors of higher levels of post-deployment PTSD included pre-deployment levels of PTSD, concerns about occupational or family disruption, not feeling adequately prepared or supported for the mission, prior experiences of stressful or traumatic events, female gender, and younger age. When pre-deployment predictors were controlled for, lower levels of perceived social support upon return, higher levels of combat experiences, and higher levels of exposure to the death and suffering of others, were also associated with post-deployment PTSD.

Discussion

These results highlight the importance of the social environment and context in predicting PTSD following a combat deployment. The fact that a soldier's level of concern over family and career prior to deployment is predictive of PTSD symptoms

22 months later, even after controlling for preexisting levels of PTSD, is striking. This suggests that a soldier's family functioning and concerns about them can have an effect on how they respond to and recover from (or fail to recover from) the stressors and trauma of combat exposure. The findings also demonstrate the importance of soldier perceptions of support, from their units, communities, friends, and families, during and following a combat deployment. The post-deployment results presented here are cross-sectional and so cannot address the possibility that PTSD symptoms are either coloring perceptions of support or themselves leading to a breakdown of support (e.g., Kaniasty & Norris, 2008). Further implications are discussed below.

RINGS Couple Study: Soldier, Partner, and Couple Functioning in OIF Soldiers

A second, smaller cohort of soldiers and their partners provided more in-depth information regarding post-deployment adjustment and couple functioning. Soldiers who had responded to an in-theater survey during their last month of deployment in Iraq and who had indicated that (1) they were married or cohabitating, (2) they lived within 50 miles of the Minneapolis Veterans Affairs Medical Center, and (3) they had at least some symptoms of PTSD were contacted and asked to come in, along with their spouses, for a two-part longitudinal study. Time 1 of the study took place within 1 year of their return from deployment, and Time 2 took place 6 months later. A total of 51 couples were recruited for the study. Participants were screened for eligibility prior to inclusion. Exclusion criteria included moderate or higher levels of violence in the relationship, moderate or higher levels of suicidal or homicidal ideation, or symptoms of psychosis or mania. One couple did not meet inclusion criteria because of suicidality and was referred for immediate clinical services instead. Another couple was made up of two individuals who had deployed together and was excluded from the present analyses. The final *N* was thus 49 couples.

Time 1 data collection included self-report measures of individual and couple functioning. In addition, soldiers and partners were separately interviewed about their reactions to the deployment, challenges they had faced individually and as a couple, and coping mechanisms and resources. Couples also participated in behavioral observation tasks where they were asked to discuss together intimacy, conflict, problems, and changes since deployment while being videotaped. Soldiers and partners also completed self-report measures of individual and couple functioning 6 months after their initial participation. Analyses of Time 2 data as well as interview and interaction tasks are currently underway. This chapter will discuss cross-sectional findings from self-report measures at Time 1.

Participants

Participants for the RINGS Couple Study had also been deployed for 16 months starting in March 2006, though none were enrolled in the RINGS Pre-deployment

Cohort. Although we did not exclude participants based on gender, our soldier respondents were all male, and partners were all female. Among soldiers, 41 (92%) were White, with three soldiers reporting Hispanic and one reporting Asian/Pacific Island ethnicities. Among partners, 47 (96%) were White, with one Hispanic and one "Other" ethnicity. Overall, ages ranged from 21 to 53 with a mean age for soldiers of 34.71 (SD = 7.39) and for partners of 33.61 (SD = 8.43). The majority of soldiers were working full time ($n = 39$, 80%) or part time ($n = 5$, 10%). Partners were also mostly working either full time ($n = 17$, 35%) or part time ($n = 17$, 35%). All but one of the couples were currently married and of those married, the average length of marriage was 9 years (SD = 6.58). Forty of the couples (82%) reported being in their first marriage.

Measures

Soldiers completed the Clinician Administered PTSD Scale (CAPS; Blake, Weathers, Nagy, & Kaloupek, 1995), a semi-structured clinical interview for the diagnosis of PTSD with established reliability and validity. They also completed the PCL, described above. Partners completed two measures of individual distress. The Beck Depression Inventory – 2 (BDI-2; Beck, Steer, & Brown, 1996) is a widely used self-report measure of depressive symptoms. The Brief Symptom Inventory (BSI; Derogatis, 1993) is a 53-item measure of general pathology and distress. The Global Severity Index (GSI) from this measure provided a general index of distress.

Both soldiers and partners completed a battery of measures of couple functioning. The DAS (Spanier, 1976) was given as a measure of global relationship satisfaction. The DAS is a 32-item measure of overall relationship quality including Likert items for consensus, cohesion, satisfaction, and emotional expression. The DAS is very widely used and has established reliability and validity (Graham, Liu, & Jeziorski, 2006). Following Jacobson, Schmaling, and Holtzworth-Munroe (1987), a score below 97 was viewed as indicative of significant couple distress. The Marital Status Inventory (MSI; Weiss & Cerreto, 1980) is a 14-item measure of thoughts, intentions, and steps towards separation or divorce. The MSI is a commonly utilized measure of relationship distress with established reliability and validity. The Conflict Tactics Scale – 2 (CTS2; Straus, Hamby, Boney-McCoy, & Sugarman, 1996) was utilized as a measure of conflict and aggression within the relationship. The CTS2 has reliable subscales assessing Physical Assault, Physical Aggression, Psychological Aggression, Sexual Coercion, Emotional Negotiation, and Cognitive Negotiation.

We were also particularly interested in closeness/intimacy and communication within couples. The Personal Assessment of Intimacy in Relationships (PAIR; Schaefer & Olson, 1981) was used to assess closeness in relationships across five dimensions: emotional, intellectual, sexual, recreational, and social intimacy. Responses indicate the soldier or partner's current perceptions of intimacy in each domain. The PAIR has shown good reliability and convergent validity (Schaefer & Olson, 1981). The Communication Pattern Questionnaire (CPQ; Christensen & Sullaway, 1984) is a measure of conflict and communication styles before, during,

and after a conflict. Noller and White (1990) analyzed the CPQ and provided four factor analytically derived subscales with adequate internal consistency reliability and good discrimination between distressed and nondistressed couples. The subscales include Coercion (partners attempt to force each other with threats or verbal or physical aggression), Mutuality (partners engage in discussion, expression, and negotiation without avoidance or withdrawal), Post-Conflict Distress (partners express remorse or sadness after a conflict), and Destructive Process (partners criticize or pressure each other, or show a demand/withdrawal pattern).

Analysis and Results

Of the 49 soldiers participating in the survey, 7 (14%) were diagnosed with PTSD on the basis of the CAPS. Scores on the PCL indicated a good range of PTSD symptom severity, ranging from 18 to 81, mean 36.33 (SD = 14.77). The mean score for soldier reports on the DAS was 103.24, with 15 (31%) exceeding the established cutoff of 97 that is recommended for identifying couples in distress. The mean or partner reports on the DAS was 107.69 (SD = 12.80), with 8 (16%) exceeding the cutoff for distressed couples. Overall, 16 couples (33%) had one or both partners who reported being in distress on the DAS. The small number of soldiers who had PTSD within the sample precluded meaningful group comparisons between soldiers with and without PTSD. However, the sample of 49 soldiers, and couples, is sufficient for dimensional (correlational) analyses. The correlation between soldier and partner ratings of couple functioning ranged from 0.72 (for ratings on the DAS) to 0.02 (for ratings on the CTS2 Emotional Negotiation subscale) with a mean correlation across all measures of 0.44. We used an alpha level of $p < 0.10$ for statistical significance due to the small sample size.

Correlations between the four symptom factors of PTSD (re-experiencing, specific avoidance, numbing, and hyperarousal, all as reported by the soldier) and couple/partner functioning are presented in Tables 3.3 and 3.4. In the soldier ratings, PTSD re-experiencing and avoidance symptoms did not relate to any reports of couple functioning. Soldier reports of numbing symptoms correlated with lower scores on the DAS, higher levels of emotional negotiation on the CTS2, more coercive communication, less mutual communication, more destructive communication patterns, and less sexual and recreational intimacy. Soldier reports of hypervigilance were related only to soldier reports of emotional negotiation and total PTSD symptoms were related to only more coercive communication.

Partner reports of couple functioning, and of their own well-being, told a slightly different story. Re-experiencing symptoms in the soldier did not correlate with partner reported couple or individual functioning. Avoidance symptoms reported by the soldier related to partner reports of more conflict resulting in injury. Soldier numbing symptoms were related to partner reports of reduced mutual communication, emotional intimacy, social intimacy, and recreational intimacy. Soldier reports of hyperarousal symptoms were also related to partner reports of less mutuality. Partner depression was related to soldier specific avoidance, hyperarousal,

Table 3.3 Correlations between PCL scores and soldier reports of functioning

	REEXP	AVOID	NUMB	AROUS	Total
DAS (total)	−0.01	−0.13	−0.30[b]	−0.11	−0.16
MSI (total)	−0.13	0.01	0.02	0.04	−0.01
CTS2: emotional negotiation	0.16	0.14	0.24[a]	0.25[a]	0.24
CTS2: cognitive negotiation	−0.04	−0.04	0.05	0.13	0.05
CTS2: psychological aggression	−0.03	−0.03	0.11	0.05	0.04
CTS2: physical assault	0.01	0.00	−0.05	−0.08	−0.05
CTS2: sexual coercion	0.05	−0.01	0.08	−0.05	0.02
CTS2: injury	−0.05	0.12	−0.01	0.05	0.02
CPQ: coercion	0.13	0.14	0.40[c]	0.17	0.25[a]
CPQ: mutuality	−0.10	−0.12	−0.30[b]	−0.15	−0.20
CPQ: post-conflict distress	0.01	0.00	0.14	0.11	0.09
CPQ: destructive patterns	0.06	0.00	0.29[b]	0.18	0.18
PAIR: emotional intimacy	0.01	−0.04	−0.21	−0.11	−0.11
PAIR: social intimacy	0.10	−0.05	−0.01	0.11	0.06
PAIR: sexual intimacy	−0.05	−0.11	−0.28[a]	−0.17	−0.19
PAIR: intellectual intimacy	−0.07	−0.05	−0.20	−0.15	−0.15
PAIR: recreational intimacy	−0.09	−0.12	−0.27[a]	−0.19	−0.20

PCL PTSD Checklist; *REEXP* re-experiencing; *AVOID* avoidance; *NUMB* numbing; *AROUS* hyperarousal; *DAS* dyadic adjustment scale; *MSI* Marital Status Inventory; *CTS2* Conflict Tactics Scale – 2; *CPQ* Communication Pattern Questionnaire; *PAIR* Personal Assessment of Intimacy Report

[a] $p < 0.10$

[b] $p < 0.05$

[c] $p < 0.01$

and total PTSD symptoms while partner general distress was related only to soldier's specific avoidance.

Discussion

The findings regarding PTSD symptom dimensions and couple functioning were for the most part consistent with prior studies. Re-experiencing symptoms had little influence on couple functioning as reported by either partner. Numbing symptoms, which have been implicated as being particularly harmful for relationship functioning, did show significant relationships with poorer overall relationship functioning and communication patterns (more destructive and coercive communication) as reported by the partner and reduced intimacy as reported by both soldier and partner. This implies that the withdrawal and lack of responsiveness inherent in numbing symptoms erodes intimacy and leads to less effective communication. While soldier reports did not demonstrate a relationship between arousal symptoms and couple functioning, partner reports suggested that soldier hyperarousal symptoms were related to less mutuality in communication. For the most part, couple conflict as measured on the CTS2 was not related to PTSD symptom dimensions. Partner distress was related to specific PTSD symptoms, particularly soldier avoidance.

Table 3.4 Correlations between PCL scores and partner reports of functioning

	REEXP	AVOID	NUMB	AROUS	Total
DAS (total)	0.06	0.03	–0.16	–0.11	–0.07
MSI (total)	0.07	0.08	0.13	0.08	0.10
CTS2: emotional negotiation	–0.15	–0.06	–0.19	–0.16	–0.17
CTS2: cognitive negotiation	–0.19	–0.13	–0.10	–0.13	–0.15
CTS2: psychological aggression	–0.03	0.06	–0.01	–0.04	–0.02
CTS2: physical assault	–0.04	0.12	0.01	–0.02	0.00
CTS2: sexual coercion	–0.03	0.06	–0.06	–0.11	–0.06
CTS2: injury	0.21	0.25[a]	0.18	0.10	0.19
CPQ: coercion	–0.01	0.18	0.03	–0.02	0.02
CPQ: mutuality	–0.23	–0.21	–0.33[b]	–0.28[b]	–0.31[b]
CPQ: post-conflict distress	0.09	0.19	0.13	0.09	0.12
CPQ: destructive patterns	0.03	0.06	0.05	0.05	0.05
PAIR: emotional intimacy	–0.14	–0.11	–0.30[b]	–0.20	–0.22
PAIR: social intimacy	–0.13	0.02	–0.32[b]	–0.24	–0.23
PAIR: sexual intimacy	0.04	0.10	–0.23	–0.03	–0.06
PAIR: intellectual intimacy	–0.02	–0.08	–0.23	–0.16	–0.15
PAIR: recreational intimacy	–0.07	–0.06	–0.30[b]	–0.21	–0.21
BSI: Global Severity Index	0.05	0.30[b]	0.19	0.07	0.14
BDI-2: total score	0.14	0.43[c]	0.13	0.27[a]	0.25[a]

PCL PTSD Checklist; *REEXP* re-experiencing; *AVOID* avoidance; *NUMB* numbing; *AROUS* hyperarousal; *DAS* Dyadic Adjustment Scale; *MSI* Marital Status Inventory; *CTS2* Conflict Tactics Scale – 2; *CPQ* Communication Pattern Questionnaire; *PAIR* Personal Assessment of Intimacy Report; *BSI* Brief Symptom Inventory; *BDI*-2 Beck Depression Inventory – 2

[a] $p < 0.10$

[b] $p < 0.05$

[c] $p < 0.01$

Conclusion

The RINGS studies discussed here have continued to document links between symptoms of PTSD and couple functioning. Although these findings require replication in independent samples and with new methodologies, they have some potential implications for the care and maintenance of military personnel. First, our findings suggest that family functioning, and worry about family, plays an early and important role in service member adjustment following combat deployment. This suggests that systemic supports to military families, and reassurances to service members about their family's well-being, may aid service members in confronting the stressors of combat deployments. Second, findings continue to suggest that the psychological distress that returning service members struggle with, such as PTSD, will affect their family relationships. A final implication is thus that support for service member families following a combat deployment may be as important as providing that support before, and during a deployment. To the extent that a supportive family environment does bolster post-deployment resilience and recovery,

efforts at aiding family members will also enhance service member functioning and readiness. A brief discussion of future directions, and limitations, follows.

Information collected from the RINGS Project to date highlights several areas for future investigation. Longitudinal findings from the Pre-deployment Cohort suggest that concerns about family functioning and well-being are important predictors of later functioning in deployed service members. Additional work is needed to replicate this finding, and to investigate possible mechanisms for these relationships. It is possible, for example, that service members reporting more concern over family functioning are experiencing more family conflict, which is making them more vulnerable to later distress. It is also possible, however, that their concern is not based on conflict but instead on other family circumstances (e.g., financial worries or the well-being of their partner or children). In such a situation, the family may be unable to offer support during deployment (an issue that is more salient now that communications between service members and families are so much more accessible during deployments) or that worry over family issues further taxes a service member's resources (Hobfoll, 2002). Exploration of these issues in future studies will be needed.

The more in-depth data collection of the RINGS Couple Study corroborates some specific relationships between aspects of PTSD and couple functioning. In particular, numbing symptoms showed higher relationships with couple functioning than other symptoms of PTSD. While Renshaw et al. (2008) found a relationship between PTSD and couple functioning based on spouses's perceptions of combat exposure, they did not report on specific factors of PTSD. Goff et al.'s (2007) findings of the importance of dissociation, sleep disturbance, and sexual dysfunction relate to numbing to the extent that dissociation represents affective numbing or withdrawal. In the present study, soldiers with higher numbing symptoms perceived more destructive and coercive communication patterns while partners perceived less social and emotional intimacy and both perceived less mutual communication and recreational intimacy. These findings further support the idea that generalized (experiential) avoidance can strain relationships. As soldiers become more avoidant of both their own internal feelings and of external activities, communication may break down with fewer opportunities for open exchanges of thoughts and feelings and more aversive communication. Findings that numbing symptoms are related to reduced intimacy both in a dyadic sense (reduced emotional and sexual intimacy) and in terms of shared activities (reduced social and recreational intimacy) demonstrate the withdrawal taking place as numbing symptoms increase. The current data do not allow us to tease apart an alternative explanation for these results, namely that it is relationship functioning leading to proclivity for PTSD symptoms, rather than PTSD symptoms leading to changes in relationship functioning. It is entirely possible that there are reciprocal relationships in place, so that certain aspects of relationships (such as more mutual and less coercive or destructive communication) help to reduce numbing symptoms while such symptoms also erode communication and functioning.

Consistent with another report on partner functioning relating to soldier PTSD in OEF troops (Renshaw et al., 2008), total PTSD scores did not correlate to partner

distress or depression. However, trauma-specific avoidance symptoms did correlate with depression and distress. This is a new finding, and unexpected, because avoidance did not correlate strongly with couple functioning and typically has not in prior studies (e.g., Riggs et al., 1998). It is possible that the trauma specific avoidance being reported by soldiers (which typically involves things such as avoiding specific reminders of the trauma) may be directly distressing to partners rather than affecting partners through the relationship. However, given that this is an unexpected finding from a small sample further interpretation should await replication.

Studies such as the RINGS Couple Project and those by teams led by Renshaw and Goff (Goff et al., 2007; Renshaw et al., 2008) represent important advances in the study of trauma reactions and couple functioning. PTSD symptoms may well have different relationships with couple functioning early on after trauma exposure than later on in a relationship. PTSD symptoms may have a cumulative effect on couple functioning over time as soldiers and partners reorganize their lives around the disruptions of PTSD symptoms. Longitudinal extensions of studies such as these are thus also important.

Some clear limitations of these results have already been mentioned. The couple sample, in particular, was a convenience sample recruited based on location and in-theater reports of PTSD symptoms and may not represent the range of individual or couple distress that can be present in the population. The fact that only 14% of the sample suffered from PTSD even under these conditions illustrates the difficulty of recruiting distressed soldiers and couples for intensive couple data collection in designs such as this one. The use of clinical samples, or of larger community samples, may allow for larger groups of couples affected by the full disorder of PTSD and thus more extensive analyses. The small sample size precluded the use of corrections for inflated experiment-wise Type I error rate, while also reducing power and increasing the chance of Type II errors. Both samples described here consist entirely of Army National Guard soldiers who are from the Midwest and are primarily Caucasian males. Thus, results from this sample need to be replicated in future studies using larger samples who are more diverse in terms of service component, gender, and race.

One limitation of both studies presented concerns the sources of the information gathered. Only soldier reports were available for the Pre-Deployment Cohort. This leads to two concerns. First, there is a risk of inflated estimates of relationships due to shared method variance. Second, the lack of collateral (i.e., family) reports lead to unanswered questions regarding what is actually happening in the family to lead to the soldier's concerns that are being reported in the study. While the couple study involves soldiers and partners, results thus far are based entirely on self-report. There may be aspects of couple interactions that are either not noticed or not reported by participants that may be related to current or future couple and individual distress. As noted, the cross-sectional nature of these findings precludes inferences regarding causality or the direction of the observed relationships. As additional data become available from the couple study, we will be better able to examine specific observed communication patterns and possible relationships between soldier, partner, and relationship functioning over time.

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Chapter 4
Distress in Spouses of Combat Veterans with PTSD: The Importance of Interpersonally Based Cognitions and Behaviors

Keith D. Renshaw, Rebecca K. Blais, and Catherine M. Caska

Abstract Despite considerable research indicating that spouses of veterans with posttraumatic stress disorder (PTSD) experience appreciable levels of psychological and marital distress, there is little empirical information about the mechanisms by which this distress develops. Given the ongoing military conflicts in Iraq and Afghanistan, and the fact that spouses form a primary support for combat veterans who return from deployments with symptoms of PTSD, a more comprehensive understanding of such mechanisms is critical. In this chapter, we review research that helps explain spouses' distress from a cognitive-behavioral framework. Relevant veteran behaviors include internalizing behaviors (e.g., emotional withdrawal and avoidance) and externalizing behaviors (e.g., verbal and physical aggression). Although less research exists regarding spousal factors that may contribute to their distress, we review existing knowledge about spouse behaviors (e.g., accommodation of veterans' symptoms) and cognitions (e.g., perceptions of burden and attributions for veterans' symptoms). Finally, we provide recommendations for future research in this area.

Introduction

Extensive research indicates that spouses of combat veterans with posttraumatic stress disorder (PTSD) have elevated levels of both psychological and marital distress (Calhoun, Beckham, & Bosworth, 2002; Dekel, Solomon, & Bleich, 2005; Dirkzwager, Bramsen, Adèr, & van der Ploeg, 2005; Jordan et al., 1992; Lev-Wiesel & Amir, 2001; Manguno-Mire et al., 2007; Mikulincer, Florian, & Solomon, 1995; Riggs, Byrne, Weathers, & Litz, 1998; Solomon, Waysman, Avitzur, & Enoch, 1991;

K.D. Renshaw (✉)
Department of Psychology, University of Utah, 380 S. 1530 E. Rm. 502,
Salt Lake City, UT, USA
e-mail: krenshaw@gmu.edu

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Solomon et al., 1992; Westerink & Giarratano, 1999). Moreover, studies also suggest that the level of spouses' distress is directly tied to the severity of combat veterans' PTSD symptoms (Beckham, Lytle, & Feldman, 1996; Dekel, 2007; Dirkzwager et al., 2005; Evans, McHugh, Hopwood, & Watt, 2003; Gallagher, Riggs, Byrne, & Weathers, 1998; Glenn et al., 2002; Hendrix, Erdmann, & Briggs, 1998; Lev-Wiesel & Amir, 2001; Nelson Goff, Crow, Reisbig, & Hamilton, 2007; Renshaw, Rodrigues, & Jones, 2008; Riggs et al., 1998). Despite this extensive evidence, there is unfortunately much less information as to *how* distress develops in these partners. Several researchers have speculated about such mechanisms, but to date, there have been few empirical investigations in this area.

Recently, Nelson Goff and Smith (2005) put forth a comprehensive theory of how PTSD impacts marital/romantic relationships. Their Couples Adaptation to Traumatic Stress (CATS) model includes bidirectional effects between both partners in a couple, as well as bidirectional effects between each member of the couple and the overall relationship (see Fig. 4.1). In other words, the nature and severity of the trauma survivor's symptoms influence the partner, and the partner's response to the survivor also has an influence on the survivor's psychological functioning. Moreover, pretrauma behaviors, patterns, and general relationship factors (e.g., communication patterns) may also influence both members of the couple. At all levels, responses can range from normative and healthy to maladaptive and pathological.

Although such a model is useful in organizing the transactional associations among individual and couple-level distress in such couples, we currently have much less understanding of *how* such effects take place. In other words, what mechanisms account for the effects represented in the model? Nelson Goff and Smith (2005) posited a number of potential mechanisms, including attachment disruptions, internalization of symptoms, projective identification, and pathological physiological

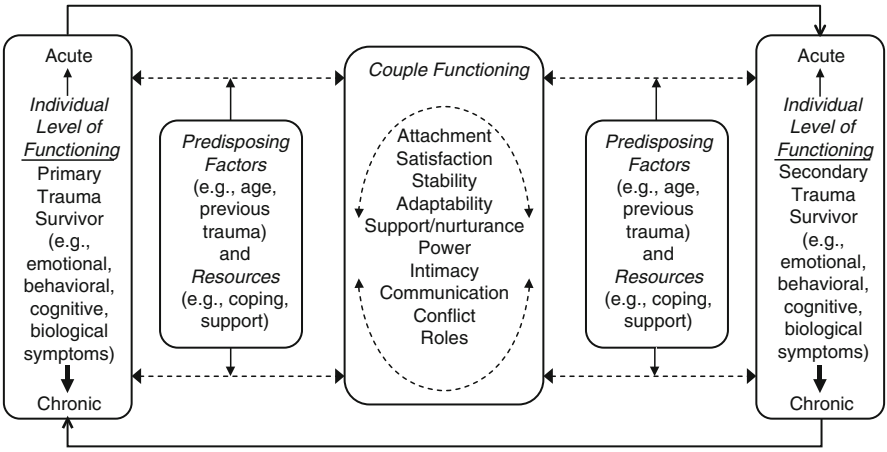

Fig. 4.1 Couple adaptation to traumatic stress model (reproduced from Nelson Goff & Smith, 2005, p. 149)

responses to conflict in both members of the couple. However, they acknowledged that, to date, none of these mechanisms has been tested empirically.

The current chapter focuses primarily on our understanding of the individual experiences of psychological and marital distress that arise in spouses of combat veterans with PTSD. Emerging research with regard to anxiety disorders in general suggests that interpersonally oriented cognitions and behaviors are important in both the development and maintenance of those disorders and, moreover, the development of distress in relatives of individuals with such disorders (e.g., Monson, Fredman, & Dekel, 2010; Renshaw, Steketee, Rodrigues, & Caska, 2010). In this chapter, we employ a similar approach to furthering our understanding of the psychological and interpersonal functioning of the partners of those with combat-related PTSD. Developing a more complex understanding of the distress in these individuals is important for multiple reasons. Most obviously, well over 1.5 million military service members have been deployed to combat theaters since 11 Sep 2001 (Tanielian & Jaycox, 2008), and initial studies indicate that between 9 and 24% of returning service members experience appreciable levels of PTSD symptoms (Hoge, Auchterlonie, & Milliken, 2006; Hoge et al., 2004; Milliken Auchterlonie, & Hoge, 2007). These numbers mean that a large number of spouses will be coping with returning combat veterans with PTSD. In addition, the CATS model (Nelson Goff & Smith, 2005) suggests that the reactions of spouses have a substantial impact on those suffering from PTSD. Thus, by helping these individuals, we might also have some effect on the combat veterans themselves. In this chapter, we will organize and summarize the relevant research in the context of interpersonally relevant cognitions and behaviors, and then suggest future directions that can further enhance our understanding of distress in spouses of those with combat-related PTSD.

Interpersonally Relevant Cognitions and Behaviors Related to Distress in Spouses of Combat Veterans

Cognitive-behavioral couples' therapy has long applied a cognitive-behavioral framework to interpersonal phenomena (e.g., Epstein & Baucom, 2002). Such therapies often focus on partners' overt behaviors, as well as underlying interpretations and attributions within each partner. In this vein, we conceptualize behaviors and cognitions as some of the primary mechanisms by which spouses of combat veterans with PTSD develop individual psychological and marital distress. We review each of these areas, in turn, below.

Veterans' Behaviors

Many of the symptoms of PTSD have clear implications for behavior in intimate relationships, notably those associated with the avoidance and hyperarousal clusters.

Symptoms of avoidance may be associated with changes in couples' leisure activities (e.g., avoiding restaurants); furthermore, within the avoidance cluster, emotional numbing may be particularly related to changes in communication patterns and sense of intimacy and closeness. Any of these changes can be related to increased experiences of distress within spouses of veterans with combat-related PTSD. On the other hand, symptoms of hyperarousal may lead to edginess, increased irritability, and angry outbursts in veterans, which can also have a negative impact on spouses' individual functioning. Below, we review the growing evidence regarding these two pathways to distress, broadly conceptualized as internalizing and externalizing behaviors.

Internalizing Behaviors

Studies have linked combat-related PTSD with decreased reports of intimacy, less constructive communication, and more demand/withdrawal communication patterns with spouses/partners (Cook, Riggs, Thompson, Coyne, & Sheikh, 2004; Roberts et al., 1982). More specifically, multiple investigations have detected a link between PTSD-related avoidance and both relationship difficulties (Carroll, Rueger, Foy, & Donahoe, 1985; Evans et al., 2003; Solomon, Dekel, & Zerach, 2008) and poorer communication (Hendrix et al., 1998) in veterans. However, only two such identified studies examined spouses' own self-report of distress, with a significant link detected between PTSD-related avoidance in service members and self-reported psychological distress in spouses (Nelson Goff, Crow, Reisbig, & Hamilton, 2009; Renshaw, 2010). Solomon et al. (2008) expanded on the association of avoidance and the marital relationship, finding that veterans' avoidance was specifically associated with lower levels of self-disclosure, which was in turn associated with lower veteran-reported intimacy with partners. This study provided the first direct evidence of a mediational pathway from a specific type of PTSD symptoms to a couple-level behavioral manifestation of those symptoms and, finally, to a change in the overall quality of the relationship.

Within the avoidance cluster, some investigators have further found that the specific symptom of emotional numbing is more strongly tied to veterans' relationship difficulties than other symptoms (Cook et al., 2004; Riggs et al., 1998; Taft, Schumm, Panuzio, & Proctor, 2008). Unfortunately, no research has yet examined whether emotional numbing is tied to changes in specific aspects of romantic relationships. Furthermore, as this symptom is typically subsumed in the avoidance cluster, it is unknown whether emotional numbing and other types of avoidance have additive negative effects on relationship functioning, or whether the findings regarding avoidance symptoms discussed above might be primarily due to the effect of emotional numbing.

As a whole, these findings suggest that PTSD-related avoidance, and perhaps emotional numbing in particular, may lead to problems in communication and feelings of

closeness or intimacy, which, in turn, is associated with relationship distress in veterans. Unfortunately, only two studies (Nelson Goff et al., 2009; Renshaw, 2010) have linked these symptoms directly with distress as reported by spouses. Thus, we must largely rely on the inference that such distress as reported by veterans is, in turn, linked to distress in spouses. Further research that focuses on spouses' own reports of distress, like that of Nelson Goff et al. (2009) and Renshaw (2010), and that focuses on the association of avoidance symptoms (and, specifically, emotional numbing) with defined relationship behaviors (e.g., changes in activity patterns or communication styles), like that of Solomon et al. (2008), is needed to help clarify the mechanisms by which distress develops in spouses of veterans with combat-related PTSD.

Externalizing Behaviors

Multiple investigations have also revealed associations between combat-related PTSD and higher levels of physical and psychological aggression toward spouses (Byrne & Riggs, 1996; Carroll et al., 1985; Glenn et al., 2002; Jordan et al., 1992; Taft, Street, Marshall, Dowdall, & Riggs, 2007; Verbosky & Ryan, 1988). Not surprisingly, such aggression is associated with greater relationship distress in spouses (e.g., Calhoun et al., 2002; Solomon et al., 2008). Furthermore, symptoms of hyperarousal in particular have been linked to greater levels of both aggression and anger (Evans et al., 2003; Savarese, Suvak, King, & King, 2001; Solomon et al., 2008; Taft, Kaloupek, et al., 2007) and greater marital difficulties (Evans et al., 2003; Taft et al., 2008). Along these lines, three groups of investigators have recently reported that anger/aggression mediates the relationship between PTSD-related symptoms of hyperarousal and relationship problems in veterans (Evans et al., 2003; Rodrigues & Renshaw, 2009a; Solomon et al., 2008). In addition, Rodrigues and Renshaw (2009b) found the same pattern of mediation using spouses' own self-report of marital distress, as well as spouses' own perceptions of veterans' symptoms of PTSD and veterans' aggression. These more recent findings provide replicated support for the proposed links between veterans' hyperarousal, veterans' aggressive behavior and angry outbursts, and marital distress, although once again, further research employing direct assessment of spouses, like that of Rodrigues and Renshaw (2009b), is needed.

In addition, PTSD is associated with higher levels of substance use problems (e.g., Breslau, Davis, & Schultz, 2003). Substance misuse is also associated with greater levels of marital distress (e.g., see review by Marshal, 2003). Furthermore, Taft, Kaloupek et al. (2007) found that hyperarousal symptoms exerted not only a direct effect on interpersonal aggression in veterans, but also an indirect effect on aggression via levels of alcohol use. Thus, comorbid alcohol and drug use is another veteran behavior that may have a strong impact on spouses' distress. Once again, future research that includes direct assessment of distress in spouses and that focuses on specific behaviors that may mediate the association of PTSD-related hyperarousal in

veterans and relationship distress in spouses (e.g., Taft, Kaloupek, et al.) can help clarify the mechanisms by which spouses of veterans with combat-related PTSD become distressed.

Spouses' Behaviors

We identified no empirical research focused on specific behaviors of spouses of veterans with combat-related PTSD that might relate to spouses' own distress. Recently, however, Monson and colleagues (Fredman, Monson, & Adair, in press; Monson, Fredman, & Dekel, 2010) have reported frequently observing accommodating behavior in their clinical work with spouses of veterans with combat-related PTSD. In the context of anxiety disorders, accommodation refers to behaviors of relatives that are intended to alleviate a patient's anxiety in the short-term by facilitating the patient's avoidance. For example, Monson, Fredman, and Dekel note that spouses sometimes take on responsibility for tasks that make veterans anxious (e.g., grocery shopping) or make excuses to friends and family for veterans' avoidance of group activities or events.

Although no empirical data regarding accommodation in spouses of those with PTSD yet exist, these types of behaviors have been observed frequently in relatives and spouses of those with other types of anxiety disorders like obsessive compulsive disorder (OCD; see review by Renshaw, Steketee, et al., 2010). In OCD, accommodation in relatives/spouses of individuals with OCD is significantly correlated with both relationship and psychological distress in those relatives/spouses (Renshaw, Steketee et al., 2010). Similarly, Monson, Fredman, and Dekel (2010) note that accommodation in spouses of those with PTSD is typically associated with decreased relationship satisfaction due to restrictions in mutually enjoyable activities and open communication (e.g., a spouses avoiding expression of too much emotion or discussion of certain topics). Thus, accommodation may be one example of spousal behavior that has an impact on their own adjustment to veterans' PTSD. Empirical research that parallels that conducted with relatives/spouses of those with OCD and other anxiety disorders is needed, however, to further evaluate this potential mechanism of spouse distress.

Spouses' Cognitions

In this chapter, we focus on spouses' cognitions rather than veterans' cognitions, as veterans' cognitions would likely influence the spouse through their effects on veterans' overt behavior. There are three primary areas of spousal cognition that have recently been shown to be related to their own levels of distress: (1) perceptions of veterans' functioning, (2) attributions for veterans' psychological and functional difficulties, and (3) perceived burden. We review this evidence below;

however, it is important to note that this general realm has only recently received empirical attention. Thus, there are likely several additional areas of spousal cognition that may impact their reactions to combat-related PTSD that are yet to be investigated.

Perceptions of Veterans' Symptom Severity

One area of cognition that likely plays a role in a spouse's distress is his/her perception of how symptomatic the veteran is, and how well the spouse believes the veteran is coping with any perceived distress. Although this point may seem fairly obvious, there are important implications that derive from considering this area of cognition. In a recent study of 50 National Guard service members who had served in Iraq, Renshaw, Rodrigues, & Jones (2008) found that spouses' perceptions of service members' PTSD symptom severity were significantly more strongly related to spouses' distress than service members' own self-report of symptom severity. Moreover, there was a significant interaction between spouses' perceptions and veterans' own self-report, such that when spouses perceived high levels of PTSD symptoms in service members, higher reports of PTSD from service members were related to *less* psychological distress in spouses. In other words, spouses were most distressed when they believed service members were having psychological difficulties, but service members reported that they were not symptomatic. Renshaw, Rodrigues, and Jones (2008) argued that the greater distress in these spouses may be due to the combined effects of (a) service members' symptoms and (b) conflicts and problems that ensue due to the disagreement between service members and spouses about how distressed the service members truly were (e.g., conflict about whether service members should seek mental health services). This type of situation could lead to both increased frustration and marital conflict for spouses, which could contribute to greater psychological and marital distress.

These replicated findings suggest that spouses' perceptions of veterans' symptoms may be more than simply a proxy index of veterans' PTSD. Rather, the correspondence (or lack thereof) between spouses' perceptions and veterans' own admissions of such symptoms appears to be influential in its own right. In addition to potential conflicts regarding the veterans' need for psychological help, such disagreements in perceptions of veterans' symptoms may lead to overt conflicts if the spouse openly interprets certain behaviors as reflective of a mental illness (which veterans may view as patronizing or condescending). Moreover, such disagreement may impact the spouse's beliefs about the likelihood that such problems will remain intractable (e.g., if the veteran does not admit the need for help, the spouse may have a more pessimistic outlook on the likelihood of improvement), which could have additional impact on the spouse's distress and commitment to the relationship. Future studies of spouses of veterans with combat-related PTSD are needed to investigate these possibilities and to determine whether such information can help inform the design of interventions to help mitigate spouses' distress.

Attributions for Perceived Problems

Prior research has suggested that people's emotional reactions to others' psychological problems are highly related to their attributions for those problems. For example, when individuals view another's psychological difficulties as uncontrollable, they are more likely to experience empathy or pity, but when they view such difficulties as controllable, they are more likely to feel critical and blaming of that individual (Barrowclough & Hooley, 2003; McKay & Barrowclough, 2005; Renshaw, Chambless, & Steketee, 2006; Weiner, Perry, & Magnusson, 1988). Along these lines, two recent studies have yielded results suggesting that spouses' attributions may be important in their reactions to combat veterans' symptoms.

In the aforementioned study of 50 spouses of National Guard service members who served in Iraq (Renshaw, Rodrigues, & Jones 2008), spouses' perceptions of service members' deployment experiences were also assessed. There was a significant interaction between spouses' perceptions of service members' combat experience and service members' self-report of PTSD symptoms in predicting spouses' marital distress. Specifically, when spouses perceived that service members had experienced low levels of combat exposure, the association between service members' PTSD and spouses' marital distress was significant and positive, as in most prior research (see reviews by Galovski & Lyons, 2004; Monson, Taft, & Fredman, in press). However, when spouses perceived that service members had experienced high levels of combat, spouses' marital distress was not related to service members' PTSD symptoms. In a larger follow-up study of nearly 200 spouses of service members who had been deployed to Iraq or Afghanistan during OEF/OIF, a similar pattern with regard to spouses' psychological distress was found (Renshaw, Rodrigues, Caska, Owens, & Jones 2008). Specifically, when spouses perceived that service members had experienced high levels of traumatic postbattle experiences (e.g., handling dead bodies), there was no significant association of service members' symptoms and spouses' psychological distress. However, when spouses perceived that service members had experienced few such postbattle experiences, there was a significant, positive association between service members' and spouses' psychological symptoms.

This replicated pattern of findings is consistent with the idea that spouses are less negatively affected by veterans' symptoms if they can attribute those symptoms to external, uncontrollable events. In addition, spouses' attributions of globality and stability may also play an important role in their distress. For instance, spouses who view veterans' problems as specific to only their relationship may have a substantially different reaction than those who view veterans' problems as more global in nature, and spouses who see veterans' symptoms as stable and intractable are likely to develop more distress than those who see such problems as temporary. Furthermore, spouses' attributions are likely to change over time, as spouses' view of problems as temporary and uncontrollable may change if significant amounts of time pass without any improvement in veterans' functioning. Future research that incorporates explicit assessment of spouses' attributions over time will help elucidate these relationships.

Perceived Burden

Perceived burden refers to the negative impact that a spouse believes a veteran and his/her PTSD symptoms have had on areas of the spouse's life, such as physical and psychological well-being, social life, and finances. Higher levels of perceived burden have been detected in relatives of individuals with a variety of medical and mental health–related problems, with direct correlations between patient symptom severity and relatives' perceived burden (Biegel, Ishler, Katz, & Johnson, 2007; Majerovitz, 2007; McDonell, Short, Berry, & Dyck, 2003). These findings have recently been extended to spouses of veterans with combat-related PTSD (Beckham et al., 1996; Calhoun et al., 2002; Dekel et al., 2005; Manguno-Mire et al., 2007). In turn, spouses' perceived burden has also been shown to be related to their levels of psychological distress (Beckham et al., 1996; Calhoun et al., 2002; Caska & Renshaw, in press; Dekel et al., 2005; Manguno-Mire et al., 2007), and two studies have found that spouses' perceived burden partially or fully mediates the relation between patients' symptoms of PTSD and spouses' distress (Caska & Renshaw, in press; Dekel et al., 2005). Moreover, Caska and Renshaw (in press) found that this pattern held for other types of psychological symptoms (e.g., depression, general anxiety) and was equally strong for spouses of service members with clinical and nonclinical levels of distress.

Although the relevance of perceived burden seems clear, what is yet to be determined is the extent to which such perceptions might reflect distortions due to spouses' own methods of coping with stress, vs. an accurate reflection of difficulties stemming directly from veterans' PTSD. Caska and Renshaw (in press) made a preliminary attempt to address this by examining the unique variance in perceived burden that was accounted for by veterans' self-reported PTSD symptom severity and several spousal characteristics (e.g., neuroticism, coping styles, social support). In a simultaneous regression of burden onto these factors, only veterans' symptom severity and one spousal characteristic (emotion-focused coping) remained as significant correlates of burden. This pattern suggests that perceptions of burden are more tied to veterans' actual symptoms than intraindividual characteristics of the spouse; however, some intraindividual characteristics may play a role. These results, however, are clearly preliminary. Further research is needed to determine how such perceptions relate to more objective measures of veterans' functioning, of excess responsibility and limitations placed on spouses, and of individual characteristics of spouses that may be associated with cognitive distortions.

Summary

In the context of the CATS model (Nelson Goff & Smith, 2005) (see Fig. 4.1), the evidence reviewed above focuses on the individual partner functioning box, and the paths from veterans' functioning and the couples' relationship to partners' functioning. There appear to be several interpersonally oriented behaviors on the part of both veterans and spouses that can directly impact spouses' psychological well-being and

marital satisfaction. Veterans' avoidance and emotional withdrawal may result in feelings of loneliness, abandonment, frustration, and marital dissatisfaction in spouses. Veterans' hyperarousal and angry outbursts may result in a chaotic living situation that contributes to psychological and marital distress in spouses. At the extreme, such outbursts may include violent acts toward the partner that lead to more severe distress. Although there is less research to date on spouses' behaviors that may play a role in their distress, the novel work of Monson and colleagues (Fredman et al., in press; Monson, Fredman, Dekel, 2010) suggests that spouses of veterans with combat-related PTSD may engage in accommodating behaviors, such as facilitating veterans' avoidance. Despite the fact that such behaviors may be well-intentioned, research with regard to other anxiety disorders suggests that accommodating behavior is linked with increased levels of both psychological and relationship distress in family members (e.g., see review by Renshaw, Steketee, et al., 2010).

In addition, there are several areas of cognition that may directly affect spouses' individual experience of psychological and marital distress. Mounting research suggests that the degree to which spouses feel burdened by veterans' symptoms has an important association with their own levels of distress (Beckham et al., 1996; Calhoun et al., 2002; Caska & Renshaw, in press; Dekel et al., 2005; Manguno-Mire et al., 2007). Also, recent findings from multiple samples indicate that the way in which spouses perceive and explain veterans' problems and symptoms are an important component of their emotional reaction to veterans' PTSD. These perceptions of and attributions for others' behaviors have proven to be integral in understanding the reactions of relatives of patients with other types of anxiety disorders (e.g., Renshaw, Steketee et al., 2010). Based on this type of research and the recent findings discussed above, such cognitions appear to have the potential to help elucidate our understanding of the distress experienced by spouses of veterans with combat-related PTSD, as well.

Below, we discuss the implications for future research of these findings and the application of a cognitive-behavioral perspective to this area. Given the recency of much of this research, the implications and recommendations presented below are certainly preliminary, but will hopefully provide a guide for future inquiry in this area.

Conclusions and Future Directions

As noted above, over 1.5 million military service members have been deployed to combat theaters in recent years (Tanielian & Jaycox, 2008), and the current sociopolitical climate suggests that such deployments will continue for some time to come. Epidemiological studies of returning service members indicate that as much as 24% of returning service members are experiencing appreciable levels of PTSD symptoms within a few months of returning home (Milliken et al., 2007). One of the most important predictors of whether individuals develop PTSD after traumatic events is the presence of strong social support (see meta-analyses by Brewin, Andrews, & Valentine, 2000; Ozer, Best, Lipsey, & Weiss, 2003). At the same time, a large body of literature demonstrates that spouses of those with combat-related

PTSD, who could potentially provide such needed social support, are particularly vulnerable to personal distress of their own (see reviews by Galovski & Lyons, 2004; Monson, Taft & Fredman, in press). Thus, veterans with combat-related PTSD and their spouses represent a system at risk of worsening intraindividual and interpersonal distress. This potential systemic risk is captured in the CATS model proposed by Nelson Goff and Smith (2005) (see Fig. 4.1).

Given this clear risk, it is imperative to advance our understanding in this area by investigating the potential mechanisms by which distress occurs in both combat veterans with PTSD and their spouses. With regard to the spouses, we need to begin to understand how some individuals become distressed while others do not. What are the risk and protective factors for the development of individual distress in spouses of those with combat-related PTSD? As reviewed above, emerging research over the past several years suggests that interpersonally relevant cognitions and behaviors can provide a useful theoretical perspective in this area. This perspective can, in turn, provide a structure for the design of interventions that target both individual- and possibly couple-level distress. Based on this perspective and the research to date, we offer the following suggestions for future research that can help advance our knowledge in this area.

1. Research on functioning in romantic relationships needs to progress to include reports from the actual partners of veterans, rather than relying solely on veterans' self-report. Although it is important to understand the perceptions of veterans, it is clear that those perceptions do not always match the perceptions of their spouses. Thus, to gain a clearer understanding of spousal distress, we recommend that researchers include explicit assessment of those spouses. Ideally, future investigations would incorporate self-report from both partners in the couple, as well as objective measures (e.g., clinician-administered interview, behavioral observation).
2. Investigations of spousal distress should move beyond consideration of general PTSD symptom severity in veterans to include presence and severity of specific symptoms associated with PTSD. Studies that examine the specific clusters of reexperiencing, avoidance, and hyperarousal have suggested that veterans' reexperiencing symptoms are typically unrelated to spousal distress, whereas avoidance and hyperarousal seem more strongly linked to such distress. Moreover, specific symptoms within clusters may be important. The clearest example of this possibility is the specific association of veterans' emotional numbing (over and above other avoidance symptoms) with relationship distress (Cook et al., 2004; Riggs et al., 1998; Taft et al., 2008). Future research needs to consider the possibility that specific symptoms within the clusters may carry more weight than others in predicting spouses' distress. Thus, we recommend that researchers employ assessment and analytic techniques that enable the examination of associations between spousal distress and specific symptoms or sets of symptoms in veterans with PTSD.
3. Related to the recommendation above, there are many comorbid conditions that frequently accompany PTSD, such as depression and substance abuse (e.g., Miller, Fogler, Wolf, Kaloupek, & Keane, 2008). Thus, we recommend that

researchers include these constructs when examining specific symptom sets in relation to spouses' distress.

4. Along the same lines, not all combat veterans who experience distress upon return from deployment will meet criteria for a clinical diagnosis of PTSD. Nevertheless, subclinical levels of PTSD and associated conditions are likely to be quite stressful for spouses. Thus, we recommend that researchers include a focus on subclinical levels of PTSD in future research on couples and families of combat veterans.
5. In general, research on marital relationships in the context of combat-related PTSD has been largely confined to global measures of relationship satisfaction as outcome variables. We recommend that researchers focus on specific aspects of relationship satisfaction, such as intimacy and closeness, trust, commitment, and sexual functioning. It is likely that different areas of relationship functioning may be more or less associated with different aspects of PTSD (e.g., emotional numbing may be associated with greater decreases in intimacy than in trust); thus, research that includes multiple realms of relationship functioning can help clarify the distress experienced by spouses.
6. We strongly recommend that research in this area move toward a focus on the mechanisms by which spouses of veterans with combat-related PTSD develop psychological and marital distress. In this vein, we encourage researchers to include explicit assessment of interpersonally relevant cognitions and behaviors (i.e., veterans' behaviors, spouses' behaviors, couple-level behaviors, and spouses' cognitions). Moreover, because this perspective is only one theoretical possibility, we call on researchers with other theoretical orientations to clearly spell out their theoretical framework of spousal distress and design and conduct research that can test their proposed constructs. Relatedly, we encourage researchers to move beyond simple correlational associations to examine theoretically driven models of mediation and moderation. A good example of such research is provided by Solomon et al. (2008), who examined specific types of PTSD symptoms (i.e., reexperiencing, avoidance, and hyperarousal), theoretically informed behavioral correlates (e.g., self-disclosure and aggression), and relationship variables (e.g., intimacy). Only with such focused efforts can we move our knowledge in this area forward in a meaningful manner.
7. Given the likely transactional processes that occur in the relationships of combat veterans with clinical or subclinical PTSD, there is a strong need for longitudinal research that can adequately test and model such transactions. In addition, as such data are collected, the use of more sophisticated analytic approaches (e.g., latent growth curve analysis, hierarchical linear modeling) that can model effects over time and account for both individual and couple-level effects will be needed. This type of research will greatly enable us to increase our knowledge in this important area.
8. Lastly, we urge researchers to attend to potential sex and cultural differences in this area. Studies of spouses of veterans with combat-related PTSD have been almost uniformly limited to female spouses of male veterans, with predominantly White samples. As we begin to advance our knowledge in this area, and particularly as increasing numbers of women join the branches of the

military, it is extremely important not to overgeneralize previous findings. For instance, extensive prior research has indicated that veterans' degree of combat exposure is related to interpersonal problems only indirectly, via symptoms of PTSD (see reviews by Galovski & Lyons, 2004; Monson, Taft, & Fredman, 2009). However, in a recent study that included large numbers of both male female veterans, Taft et al. (2008) found that combat exposure exhibited both direct and indirect effects on interpersonal problems for female veterans (not for male veterans). This type of research is sorely needed, as correlates of relationship distress often differ across sexes. Similarly, very little empirical information exists on potential differences across racial/ethnic groups in terms of distress in spouses of combat veterans with PTSD. In one recent study of perceived burden (Caska & Renshaw, in press), there was preliminary evidence for higher levels of perceived burden in nonwhite spouses, relative to White spouses. However, these findings were limited by the very low number of minority participants in that sample. Future studies that can recruit both minorities and male spouses of female veterans would greatly enhance our knowledge in this area.

Although we recognize that these recommendations do not address all of the limitations in this area of research, we hope that they will help provide a template for future studies that can assist in the overall understanding of functioning in spouses of veterans with combat-related PTSD. As we broaden this understanding, we can move toward the design of interventions that target risk factors and enhance resilience factors in these spouses. Such interventions could serve not only to alleviate distress in these individuals, but also in veterans who can be bolstered to some degree by strong support networks.

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Chapter 5
Empirically Guided Community Intervention for Partner Abuse, Child Maltreatment, Suicidality, and Substance Misuse

Richard E. Heyman, Amy M. Smith Slep, and John P. Nelson

Abstract This chapter describes an initial implementation and evaluation of NORTH STAR, a community-based framework for the prevention of family maltreatment, suicidality, and substance problems. NORTH STAR was evaluated using existing installation-level prevention teams at 24 U.S. Air Force bases worldwide in the context of a randomized controlled trial (RCT). NORTH STAR organizes teams' prevention efforts by (a) providing the results of a needs assessment focused both on problems and risk/promotive factors, (b) prioritizing among problems and associated factors, (c) implementing activities from a menu of empirically supported community-based initiatives for each risk factor, (d) evaluating those activities, and (e) ensuring sustainability through a reliance on preexisting resources. NORTH STAR had promising results, appearing to reduce some problems, especially in communities with more adverse prevention climates. The implications of our efforts for community-wide prevention generally and within the U.S. Air Force are considered.

Force protection is one of the most significant tasks facing the U.S. military in these uncertain times. Whereas the majority of attention focuses on protecting active duty (AD) members from external threats (e.g., improved body armor to protect service members from enemy fire), less attention is directed toward internal threats affecting force protection and readiness. Three behavioral health threats – suicidality, family maltreatment, and problematic alcohol and drug use[1] – share several common traits: (a) they are prevalent (at least one out of three active duty members anonymously report at least one of these problems at a severe level; Slep, Heyman, & Lorber, 2009); (b) they are among the top concerns of military commanders

[1]Beginning in 2008, a fourth behavioral health protection threat – Post-Traumatic Stress Disorder (PTSD)/Combat Operational Stress Reaction (COSR) – was added to this project's purview.

R.E. Heyman (✉)
Family Translational Research Group, Department of Psychology, Stony Brook University, State University of New York, Stony Brook, NY, 11794-2500, USA
e-mail: Richard.heyman@stonybrook.edu

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(Office for Prevention and Health Services Assessment, 1999); (c) their existence is typically hidden by AD members and families; (d) they are costly, both in dollars required to handle incidents that come to light and in reduced readiness; (e) they share key risk and protective factors; (f) they are heavily influenced by social factors, and thus necessitate a community-level response; and (g) their presence often overlaps in affected military families.

Despite the widespread concern that these threats impair warfighters' readiness to fight and win our nation's wars, incomplete information and strategies prevent the provision of an optimal force health protection response. Moving toward "information superiority" – one of the key concepts of Joint Vision 2010/2020, the vision for the twenty-first century military – "is a driving force in the force health protection concept, which uses information to [optimize] preventive measures… " (Medical Readiness, Division, J-4, The Joint Staff, 2003, p. 3).

Just as military information superiority is considered a prerequisite to the effective countering of military threats, health information superiority is a prerequisite for effectively countering force behavioral health threats. This chapter will describe the history and evolution of the NORTH STAR,[2] a collaborative initiative of researchers at Stony Brook University and the U.S. Air Force (AF). NORTH STAR seeks to provide information necessary to guide military communities' prevention action planning and to test whether communities' implementing evidence-based prevention efforts reduces the prevalence of identified problems, decreases severity of associated risk factors and increases resilience. This chapter will (a) provide a brief history of the NORTH STAR initiative; (b) detail the rationale for NORTH STAR's approach; (c) discuss the outcomes and lessons learned from a 4-base pilot test; and (d) provide a preliminary sketch of the outcomes emerging and lessons learned from a 24-base randomized controlled trial (RCT).

Throughout this chapter, we will label three behavioral health threats – suicidality, family maltreatment, and alcohol and drug abuse – as "secretive problems." This is not at all to imply that their existence is a secret. The problems are not secret from military leadership, who have identified them as key targets for improved community health and have dedicated considerable resources to prevent and treat them. The problems are not secret from commanders, who list them among their top concerns (Office for Prevention and Health Services Assessment, 1999). The problems are not secret from affected members' companies, who bear the brunt of the morale and readiness degradation that are the common fallout of such problems. However, individuals, including AD members, try to keep these problems secret from the community, which typically learns that a member has a problem only after a serious incident (e.g., suicide attempt, partner abuse arrest, DUI charge).

The known prevalences of these problems – the "identified" proportion of the population tracked through current military systems – represent a minority of those with a secretive problem. The full prevalences of these problems – the proportion of

[2]NORTH STAR is an acronym for *N*ew *O*rientation for *R*educing *T*hreats to *H*ealth from *S*ecretive-problems *T*hat *A*ffect *R*eadiness.

the population engaging in these behaviors at problematic levels – are not definitively known across the U.S. military, although data from two AF-wide surveys indicate that it constitutes approximately 35% of AD members. Further, the surveys show that only about 1 in 13 of those self-reporting a severe secretive problem indicate that anyone in uniform knows that they are having even a mild problem.

In sum, the secretive nature of the problems requires innovation and adaptation in information gathering, prevention planning, and effectiveness monitoring. Because the secretive nature helps not only define the problems but also influence the solutions, we have adopted the label "secretive problems" throughout this chapter.

United States Air Force

The U.S. Air Force began as the U.S. Army Air Forces (formerly U.S. Army Air Corps) and was made a separate service in 1947. Currently, the AF has slightly fewer than 332,000 AD members and almost 180,000 civilian employees. These personnel are stationed at the approximately 80 AF permanent bases (not counting numerous other locations, such as in Iraq and Afghanistan), 65 located in the continental United States and 18 located in strategic overseas locations. Twenty percent of the current force is assigned to overseas bases. Demographically, the AF has 40% of members under the age of 26; 41% are single, and 19.4% of female. The AF has the most educated force of the four branches: 70% of enlisted personnel have completed at least one semester of college, with 19% having earned an associate's degree, 5% a bachelor's degree, and 1% master's degree; 45% of officers have earned a bachelor's degree, with 44% having earned a master's degree, and 11% having earned a professional degree or doctorate.[3]

Air Staff, located predominantly at the Pentagon, provides overall oversight and operating guidance. Nine major commands[4] are organized on a functional basis in the United States (Air Combat Command, Air Education and Training Command, Air Force Global Strike Command, Air Force Materiel Command, Air Force Space Command, Air Force Special Operations Command, Air Mobility Command) and a geographic basis outside the continental U.S. (Pacific Air Forces, United States Air Forces in Europe). They accomplish designated elements of Air Force worldwide activities. Also, they organize, administer, equip, and train their subordinate elements for the accomplishment of assigned missions. In descending order of command, elements of major commands include numbered air forces (e.g., 1st, 9th, and 12th Air Forces are part of Air Combat Command), wings, groups, squadrons, and flights.

Wings constitute the AF's operational arm and heavily influence the culture of base communities. Although there is a great range in the population and size of AF

[3] Data as of January 2010 derived from the Air Force Personnel Center's Interactive Demographic Analysis System (wwa.afpc.randolph.af.mil/demographics/).

[4] A tenth major command, the Air Force Reserve Command, is responsible for the 35 AF Reserve wings.

bases, the average AF base has approximately 3,000 AD members assigned; 30–40% of members and their families live on bases. (Over 350,000 family members are part of AF AD communities.) Like a small town and other services' installations, AF bases contain a wide range of resources, agencies, and services necessary to support a meaningful quality of life (e.g., recreational, medical, and human service agencies and programs). Many of these resources are focused on meeting the unique demands, such as frequent relocation and separation, associated with the military lifestyle.

History of the NORTH STAR Initiative

In 1997, staff at Headquarters AF Family Advocacy Program (FAP; the agency charged with preventing and treating partner abuse and child maltreatment) asked for research proposals to help them better establish the full prevalence of family maltreatment in AF communities; FAP managed a central registry of all substantiated cases but did not know the prevalences of similar cases that never came to FAP's attention. A contract was executed with Stony Brook University to develop statistical algorithms to estimate family maltreatment from nonsensitive, regularly collected community survey data (see Heyman & Slep, in press). Those efforts went well, and plans were made to add detailed questions about family maltreatment to the biennial AF Community Assessment (CA). In 2001, these plans were vetted by the FAP's medical command and by the Associate Judge Advocate General of the AF. In 2001–2002, the two other behavioral health problems within the purview of the AF's Community Prevention Division (suicidality and alcohol abuse/drug use) were added to NORTH STAR's charge. Discussing potential participation in a pilot test of the additional, sensitive survey questions with wing leadership and local staff at four volunteer bases sparked the idea for NORTH STAR. To understand its genesis, one must understand the prevention infrastructure that exists at each base, major command, and the Air Staff itself.

Air Force Community Action and Information Board (CAIBs) and Integrated Delivery System (IDS)

In 1996, the AF formed the Suicide Prevention Integrated Product Team across all functional areas of the AF to create a strategy to reduce suicide among active duty members. The subsequent AF Suicide Prevention Program (Knox, Litts, Talcott, Feig, & Caine, 2003) adopted an approach emphasizing personal and community connections that fostered resilience and support to all Airmen (i.e., not waiting until an Airman was suicidal).

To enact this strategy, the AF established a comprehensive structure to coordinate the efforts of all AF members/staff and programs with responsibility for the general health and well-being of the force. This structure consists of a leadership

board and an action group at each management level (i.e., the Air Staff, each major command, and each AF installation). The board is the Community Action and Information Board (CAIB), mandated by Air Force Instruction (AFI) 90-501. The mission of the CAIB is to identify and resolve issues that impact the readiness of AF members and their families, promote the perception of the AF as a positive way of life, and enhance members' ability to function as productive members of the AF Community. The emphasis [is] on positive actions and programs that strengthen force readiness through a sense of community and assist AF members, their families, and communities to thrive and successfully manage the demands of military life. CAIBs function as a forum for the people of the AF, giving AF members and their families an opportunity to have their concerns addressed in a cross-functional setting" (Air Force Community Action Information Board, 2008).

The action arm of the CAIB is the Integrated Delivery System (IDS) team. The IDS is chartered as a standing subcommittee of the CAIB (AFI 90-501). Six prevention-oriented agencies appoint leaders to sit on the IDS (i.e., Chaplain, Child and Youth Programs, FAP, Family Support, Health and Wellness Centers/Health Promotions, and Mental Health clinics). However, "since prevention is a community-wide concern, any [other] program or agency … is welcome to participate in collaborating, coordinating, and marketing these efforts" (Nelson, 2001, p. 24). The IDS has four main functions: (a) centralized information and referral; (b) assessment of risk and protective factors at the unit and base level; (c) planning and delivery of prevention services; and (d) community awareness of the services that IDS constituent agencies offer.

That the CAIB and IDS are part of an infrastructure that gives the AF an advantage over civilian communities, where the precondition of bringing together a group of prevention-oriented leaders to coordinate initiatives for overarching community needs is difficult. The CAIB and IDS can mobilize tremendous assets in the effort to reduce secretive problems. However, the task of assessing risk and protective factors, making sense out of such data, selecting effective prevention activities, ensuring adequate reach, and offering a seamless system of comprehensive and effective prevention and treatment services – with no financial or personnel resources specifically allocated to these efforts – is a daunting one.

NORTH STAR's Conception

In 2001–2002, we met with wing leadership and IDSs to discuss the CA+ (the CA with the detailed assessment of family maltreatment, suicidality, and alcohol misuse/drug use; PTSD/COSR symptoms were added in the 2008 survey). However, this information infrastructure was being built for planning for Air Staff prevention/treatment planning and personnel allocation. When we discussed with base IDSs that an advantage of participation was that we could provide base-level risk and protective factor data to guide IDS community prevention action planning, it was clear that bases lacked the expertise to turn such information into informed action.

We recognized that the AF essentially was building or had built all the necessary pieces of state-of-the-art prevention infrastructure, but because the pieces were built for various purposes without an overarching strategy, they were lacking the interconnections to make the pieces function as a cohesive system. We envisioned NORTH STAR as the bridge between (a) the planned data gathering of the prevalences of various secretive problems and risk and protective factors for these problems and (b) the service delivery infrastructure that was not currently using empirical guidance in community action planning and only occasionally was using evidence based interventions. We were fortunate to receive two grants from the Department of Defense's Congressionally Directed Medical Research Program to (a) develop and pilot test NORTH STAR with 4 Air Force communities and (b) conduct a RCT at 12 NORTH STAR and 12 control communities.

In the following section, we will review the recent developments in prevention science that formed the foundation for NORTH STAR.

A Prevention Science Approach

Orientation to the Prevention Science Approach

Health ≠ absence of disease. Force health protection views the health of AD members along a continuum from peak functioning to death. Rather than focusing only on keeping specific AD members out of the pathologic portion of the continuum, the goal is to move the entire AD population toward optimal functioning. Both the AF's suicide prevention program (U.S. Air Force Suicide Prevention Program, 2009) and the Army's recent suicide leadership vector (Chiarelli, 2009) recognize that – although reducing the population prevalence of suicide, alcohol dependence, drug use, substantiated maltreatment, and PTSD/COSR is important – moving the population risk level farther from these severe and interrelated problems is equally important. Increasing community resilience not only reduces the risk for, and negative impact of, secretive problems, but also optimizes healthy functioning. This focus is consistent with a paradigm shift in public health, generally (Green & Raeburn, 1988). The military's efforts to promote and enhance population health, rather than just prevent and respond to disease, have necessitated a fresh perspective. First, health promotion requires proactive policies and interventions to prevent not only disease/problems, but also risk factors for disease/problems. Second, population health promotion requires a multilevel focus that includes community-wide interventions. By considering population functioning and the multiple contexts that affect individuals' behaviors, the functioning of a population can be enhanced.

Evolution of prevention theory and methodology. With this new emphasis on population health and calls for proactive and multilevel interventions came innumerable challenges for traditional treatment research methodology. RCTs are considered the gold standard in intervention research. In the 1970s and 1980s, a few RCTs of multilevel community-wide initiatives targeting heart disease (e.g., Faquhar et al.,

1977; Murray, 1995; Puska et al., 1985) and tobacco use (Commit Research Group, 1995a, 1995b) began. These studies were monumental and extraordinarily complex undertakings, because (a) the unit of randomization was the community, rather than the individual; (b) substantial fidelity challenges were presented by communities' varying size, geography, characteristics, and unique needs; (c) data collection challenges were plentiful (e.g., because multiple components targeted multiple subpopulations, a myriad of sampling, measurement strategies, and dependent variables were required); and (d) data analysis and interpretation was difficult because of the varied implementations, components, subpopulations, and targets.

Two overarching public health implications became apparent. First, public health cannot be advanced if the strategies, no matter how effective, cannot be sustained by the communities themselves once the research study is over (Altman, 1995). Second, invariant packages cannot inform stakeholders about the most critical question facing them: Given the unique characteristics, assets and needs of a particular community, what strategies would work to reduce the prevalence of the targeted public health threat(s) in that community? (e.g., Hawkins, Catalano, & Arthur, 2002).

Prevention theory and methodology have advanced considerably over the last 20 years. Analytic techniques, such as multi-level modeling (Raudenbush & Bryk, 2002), became more mainstream and were adopted to solve some of prevention studies' most vexing statistical challenges. Theoretical frameworks to guide prevention science were developed (e.g., the Prevention Intervention Research Cycle; Mrazek & Haggerty, 1994), replacing the old primary–secondary–tertiary distinctions. These advances led to others: (a) understanding of risk and protective factors increased, as did the number of prevention programs and strategies with demonstrated efficacy; and (b) sustainability and dissemination became design targets or areas of inquiry in their own rights (e.g., Brekke, Ell, & Palinkas, 2007; Kerner, Rimer, & Emmons, 2005; Rohrbach, Grana, Sussman, & Valente, 2006) rather than afterthoughts. Building on these advances, prevention scientists were able to crack the paradox: how can one scientifically study effectiveness if the programs that communities implement are not invariant? The solution was to design RCTs that used an invariant *process*, but which allowed for community choices on targets and strategies.

This solution – adopted by Hawkins, Catalano and colleagues' (1992) in their "Communities That Care" (CtC) approach for adolescent problems such as teen pregnancy and drug and alcohol use) – was not only scientifically viable, but resulted in excellent community acceptability and promising prevention outcomes (e.g., Feinberg, Greenberg, & Osgood, 2004; Hawkins, 2001). In CtC, prevention science and community action are merged through the following four stages: (a) community mobilization, (b) assessment, (c) strategic plan development, and (d) evaluation. Mobilization refers to engaging a group of leaders and stakeholders and convincing them of the merits of adopting a data-based approach using empirically supported activities directed toward specific risk factors found to be prominent within the community. Assessment involves collecting data to describe the risk and protective factor profile of the community. Planning involves teaching community to use the data gathered in the assessment phase to prioritize needs and leverage points within the community and to identify empirically supported strategies targeting

those leverage points. CtC recommends that communities select multiple strategies for each high priority risk or protective factor that would operate at different levels, thereby increasing the likelihood of a measurable community-level change. Evaluation involves guiding the community board in how to plan and monitor the implementation of each chosen strategy (a) to ensure adequate fidelity (e.g., set minimum performance standards and monitor against those), (b) to use of process data and fresh assessment data to gauge the impact of each strategy, and (c) to refine the implementation as indicated. CtC is currently conducting its first efficacy trial; communities that have implemented CtC over the years, however, have been able to achieve some impressive and diverse outcomes, including significant improvement in cognitive skills, a 30% reduction in school problems, and a nearly 30% decrease in drug and assault charges (Hawkins, 1996). The initial results led the United States government to purchase the rights to CtC, and it is now publicly available free of charge (Substance Abuse and Mental Health Services Administration, 2009). In conclusion, although the final results of RCTs are not yet available, the CtC approach is appealing model for empirically driven, coordinated, locally tailored community intervention.

In reviewing both CtC and other leading prevention science models and programs, we identified several necessary elements for effective community-level intervention, most of which already existed within the AF or within the scientific literature. The first element was a team of positional and prevention leaders charged with monitoring and addressing community functioning and who could access viable service delivery system infrastructures. As noted earlier, each AF installation is required to have a multidisciplinary team of professionals (i.e., the IDS) who work directly with base leadership (i.e., the CAIB). The strength of the IDS is that it includes representation from every helping agency on the base and is, at least on paper, intimately connected with base leadership, which should facilitate action. Most of the agencies represented on the IDS formally include prevention programming, community outreach, or both in their activities, which suggests that they would have some staffing resources that could be directed toward empirically supported activities.

The second necessary element was an accurate and frequently updated surveillance system in place to track (a) the prevalence of maltreatment and any other problems to be addressed and how these problems are distributed within the community; (b) the status of the community on important risk and protective factors; and (c) the strength of associations between the risk/protective factors and key outcomes (e.g., secretive problems). Without this information, communities cannot set priorities, knowledgably target potential threats, or exploit areas of strength. We believed that the anonymous, internet-based, biennial CA (with the secretive problem supplement) could be an adequate source of such data. In 2003, the AF revamped the CA based on a well-articulated model of community functioning (Bowen, Martin, & Nelson, 2002). The CA's emphasis on potentially malleable risk and protective factors is especially important for prevention: intervention efforts at any level can only target factors that are not fixed. Even if genetics, personality, family of origin experiences, and behavior during adolescence are powerful risk

factors for problems in adulthood, none of these factors could ever be altered by community intervention (although they might be used in selective, targeted interventions). In contrast, work stress, family conflict, social support, and depression are all areas that could be targeted by community prevention efforts. The measure was subjected to rigorous psychometric evaluation (Snarr, Heyman, & Slep, 2007) and a shortened/strengthened version was used in the 2008 AF CA. For secretive problems, we worked with the AF for several years to develop and pilot test a supplemental survey of secretive problems. Measures of family maltreatment (partner physical and emotional abuse; child physical and emotional abuse, child neglect) that match the AF's standards were developed and tested (Heyman, Slep, & Casillas, 2001). In addition, extant measures of suicidality, alcohol abuse, and PTSD/COSR symptoms were selected. The CA is administered to large, representative samples at each base and includes brief, psychometrically sound scales assessing a variety of individual (e.g., personal coping, depressive symptoms), family (e.g., relationship satisfaction), workplace (e.g., support from leadership, workgroup cohesion), and community (e.g., community cohesion, community safety) variables. Some of these variables have been empirically identified as risk or protective factors for multiple secretive problems (e.g., depressive symptoms, relationship satisfaction, social support), whereas others have not been explored in the literature (e.g., workgroup cohesion). To facilitate the IDS teams' understanding of their data, we developed feedback report templates that graphically and verbally explained problem prevalences, the strength of risk and protective relations, and the base's specific risk or protective factor profile. Reports were kept brief and were provided in both paper and electronic formats.

The third necessary element was empirically supported intervention strategies that could (a) improve functioning on important risk and protective factors and (b) be effectively implemented on a community level. For example, several parent training programs have good empirical support and had been packaged for dissemination (e.g., Incredible Years, Webster-Stratton, 2001; Triple P, Sanders, 1999), and several programs targeting couples' communication and conflict resolution skills were similarly well developed (e.g., PREP, Markman, Renick, Floyd, Stanely, & Clements, 1993; Couple CARE, Halford, Moore, Wilson, Dyer, & Farrugia, 2004). What the AF was lacking, however, was knowledge of which strategies or programs had empirical support. Therefore, we conducted exhaustive literature reviews of interventions targeting each of the factors analyzed in the CA. As CtC had done, we assembled *A Guidebook to Activities that Work* (Slep & Heyman, 2006) that compiled basic information about each program, including a summary of the program, ways in which it had been implemented, the resources required, the strength of empirical support for the program, and how to obtain more information about the program. The current version of the guidebook includes a wide variety of activities, from WWW-based interventions (e.g., MoodGym, Christensen et al., 2004; RELATE, Busby, Holman, & Taniguchi, 2001) to DVD-based programs (e.g., Incredible Years, Webster-Stratton, 2001, Couple CARE, Halford et al., 2004) to college classes (e.g., Stress and the Healthy Mind, Schiraldi & Brown, 2002) to activities (e.g., community gardening, walking clubs).

The fourth was the capacity to conduct ongoing evaluations of impact to refine implementation. The IDS teams included individuals with the necessary skills and training to conduct informal evaluations of process, fidelity, and outcome. Typically, these teams included at least one master's level social worker or psychologist and multiple people with sophisticated computer skills. What the IDS teams did not have was the time and knowledge necessary to design evaluations that balanced competing needs, were feasible, and would result in useful data. In the pilot, we provided consultation and technical assistance with evaluation planning and implementation.

Finally, we concluded that sustainability had to be built into the entire process for it to ultimately result in a reduction in secretive problems. If the ongoing effort of the researchers is essential to the continuation of interventions, the programs are unlikely to be retained once a study is over. Furthermore, it would be difficult for such interventions to propagate to other communities without a corresponding increase in the size of the research team. Relatively little is known about what factors predict an intervention being continued after a research initiative (e.g., Gomez, Greenberg, & Feinberg, 2005). We believe that for interventions to be sustained, multiple stakeholders must be convinced of their effectiveness and value relative to other possible expenditures. Expensive training requirements are both a financial and a human resource barrier that hinders sustainability. Thus, all of our training materials and other resources were made available on the WWW without the need for in-person consultation. Furthermore, we incorporated activities (e.g., cross-base teleconferences and electronic mailing lists) that we thought might increase engagement and investment.

NORTH STAR Implementation to Date

Pilot Trial (2003–2006)

Secretive problems supplement. Prior to administration of the CA+ at the four pilot bases, it was unclear whether AD members and spouses would report secretive problems, both because of the perceived stigma and the potential career and legal repercussions of admitting to drug use and alcohol abuse. Based on feedback from pre-CA focus groups, several steps were taken to minimize respondent burden and to increase respondents' confidence in the anonymity of the survey. First, respondents were asked to log in to the survey site and select their own non-identifying and unique user identifications and passwords. Respondents were informed that they could take the survey from any computer with an internet connection. Respondents were able to exit and re-enter the survey from any computer at any time after they had established their IDs and passwords. When respondents began the secretive problem supplement, they received a consent page ("Information to Help You Decide If You Want to Participate") which described the sensitive questions

they were about to be asked, the rationale for asking them, and a summary of how the data will be used and when and how they will be able to learn the results for their community. The supplemental survey screen had links that provided reminders about anonymity and other information provided earlier. The high reported amounts of these problems and the extremely low number of complaints implied that it was viable to ask such questions to military members and spouses on an officially sanctioned survey.

Development of guidebook to empirically supported activities. The guidebook – *Enhancing the Integrated Delivery System: A Guidebook to Activities that Work* – not only included activities that had empirical support for impacting the 20 risk/protective factors included in the CA, but also others that were empirically demonstrated in the civilian literature (e.g., Heyman & Slep, 2001).

The guidebook presents interventions and activities that have empirical support for reducing risk factors and increasing protective factors for secretive problems. The activities included represent only a small fraction of those that have been developed for these purposes. Strict criteria were used to select interventions for inclusion. All of the activities presented in the guidebook:

- Target research-based *risk* and/or *protective* factors for secretive problems. Interventions that directly target family maltreatment, substance abuse, or suicidality were not included.
- Are available for implementation. That is, all information and/or materials necessary to carry them out can be obtained from the intervention developer, an independent distributor, a website, and/or other sources.
- Can be practically and feasibly implemented on a community scale. For example, interventions involving individual psychotherapy are not included in the guidebook. Although psychotherapy has been shown to have many potentially beneficial effects, it is time- and resource-intensive. On the other hand, group workshops are much more cost-effective than individual therapy and are included if they met the other criteria.
- Are empirically supported. That is, they have produced significant positive effects on the relevant risk and protective factors in community trials and/or controlled studies.

Empirical support was graded "Good," "Better," and "Best." "Good" interventions have at least some evidence that they work. Efficacy/effectiveness studies may have involved a small sample size and no control group. If long-term follow-up data was available, the effects of these activities may not last as long as those labeled "Better" or "Best." An intervention will also receive a rating of "Good" if only some of the studies evaluating it have found that it works, or if it only works with certain people or under particular circumstances. "Better" interventions have fairly strong evidence for their effectiveness, but have not been as well validated as the "Best" activities. Often, these interventions are relatively new and thus have not been evaluated in as many studies. The research may have involved a large sample size but no control group, or a control group but a small sample size; long-term follow-up data may not yet be available. "Best" interventions have been very well validated.

Most have existed for many years and have been tested in multiple studies with large sample sizes and control groups. Usually, their effects are known to last for an extended period of time. If an intervention is new, it could receive a rating of "Best" if it (a) is particularly innovative, (b) has been evaluated in at least one well-designed study, and (c) has produced especially impressive results.

Of course, the fact that a particular intervention has empirical support does not mean that it is will work under all circumstances (e.g., Chambless & Ollendick, 2001). For example, most of the activities in the guidebook were validated only with civilians. It may be that AF communities, AD members, or AF families differ from their civilian counterparts in ways that make an activity less effective or even prevent it from having any beneficial effects at all. On the other hand, it may also be that factors within a military population (e.g., community cohesion, employed person in every household) are likely to *increase* the effectiveness of a given intervention.

Risk factors were organized by ecological level (i.e., individual, family, organization, community). As shown in Appendix, the overview of each intervention contained the following elements:

- *Intervention targets*: All of the NORTH STAR targets that the intervention is known to influence.
- *Description*: A brief summary of the intervention – what activities are involved and what the intervention was designed to accomplish.
- *Minimal implementation*: Who should do what, how often, and for how long if the intervention is to be counted as part of the base's NORTH STAR activities.
- *Documented results*: The empirical evidence for the efficacy/effectiveness of the intervention. Specific studies and results are discussed and a global empirical evidence rating is provided (i.e., "Good," "Better," or "Best").
- *Resources required*: The physical, financial, and human resources that would be necessary in order to implement the intervention as described. Specific cost information is included when available.
- *Where to find more information*: Contact information for the intervention developers, distributors, and/or sources of necessary materials.
- *References*: Citations for the books and articles that have been cited in the chapter introduction and intervention descriptions.

NORTH STAR implementations at pilot bases. The Stony Brook team visited each pilot base to provide an in-brief to the key leaders and/or the CAIB on the results of the CA+, the rationale for NORTH STAR, and the agenda for the training; one-half days of training with the IDS; and an out-brief to the CAIB. At the end of the initial training the bases had completed the first several steps of NORTH STAR (i.e., prioritizing target problems and risk/protective factors based on their data and identifying possible activities to implement from the guidebook) and were in the process of investigating/selecting activities and developing a community action plan.

To follow up, monthly (or more frequent) technical assistance calls were made between the Stony Brook team and the IDS chair. The following trends became evident during these calls: (a) inequitable distribution of work/labor – often the IDS Chair assumed too much responsibility, there was limited delegation or sharing of IDS workload, and there was a lack of involvement of other community stakeholders; (b) difficulties and/or delays in obtaining funding for activities; (c) lack of knowledge and sophistication by IDS on budget and resource issues; and (d) limited CAIB involvement and commitment to the IDS action plan (despite having approved it).

A follow-up technical assistance trip was made about 9 months later consisting of 2 days of training for the IDS teams and an out-brief to the CAIB. At each base the IDS Team received one-half day training consisting of IDS overview and NORTH STAR review for new IDS members and a one-half-day training focused on base-specific implementation issues as well as monitoring and evaluation planning. These base consultation visits proved extremely valuable in identifying implementation challenges (gaps, limitations, and shortcomings) faced by the IDS service providers. Progress between the visits was limited. Although the pilot bases engaged in ongoing investigation of and planning for implementation of the selected activities, only one program at one base was implemented. One common theme was the lack of a clearly defined, detailed plan that included milestones and timelines. Responsibilities were not clearly delineated and accountability to CAIB was limited. Each base experienced difficulty in obtaining funding resources that might have been necessary for training or to purchase supplies. The first training provided "implementation considerations" for each of the identified activities, but did not engage the IDS teams in identifying specific points of contact responsible for each activity; nor in developing specific tasks and milestones; nor in establishing estimated completion dates. That training assumed, mistakenly, that IDS teams would establish these systems of structure and accountability to guide the implementation of each activity. As this assumption became evident, modifications were made to the training protocol, so that bases in the forthcoming randomized controlled trail would increase the detail and specificity of implementation plans and to ensure tasks, milestones and points of contact were identified.

During the technical assistance visit, another barrier to implementation became apparent. IDS teams were often operating almost in isolation, disconnected from the community. No sponsor, champion or advisor from senior leadership was monitoring the IDS. Team members were earnestly working but without the involvement or connection to other community stakeholders, in particular the CAIB, the community board of directors to whom they ultimately reported. At none of the bases was the CAIB engaged in an active, oversight, and guidance role. In terms of the CtC model, they were engaged in stage 3, "strategic plan development," without capitalizing on the broad-based community coalition that existed. In particular, they were not optimizing their relationship with the community board, the CAIB.

Lessons learned from the pilot implementations. The NORTH STAR experience at the pilot bases fits the old military adage "No plan survives first contact with

the enemy." The entire point of the pilot was to put NORTH STAR in the field and make any modifications necessary before launching a more extensive randomized control trial. We learned the following lessons:

- Involve senior leadership from the start. Identify and recruit a senior leader (CAIB member) to oversee and approve "work" with the IDS chair;
- Expand CAIB oversight by clearly identifying its role as the "community board"
- Build in accountability of IDS to the CAIB, base community, and the major command;
- Expand the initial training to three days so that IDS team develops a complete, comprehensive plan;
- Provide structure and guidance within each section of training to maximize its efficiency and effectiveness;
- Expand the Implementation Planning training section to ensure key tasks and milestones, points of contact, and estimated completion dates are identified and with a specific roadmap to guide implementation.
- Encourage IDS to appoint subcommittees for each activity to be implemented with a clearly designated points of contact.

Pilot data on training satisfaction/effectiveness. As reported in Slep and Heyman (2008), IDS members were assessed prior to and following receiving the NORTH STAR training. Participants were pleased with the NORTH STAR approach to prevention ($M=4.38$ [out of 5], $SD=0.57$), NORTH STAR training ($M=4.56$, $SD=0.51$), and NORTH STAR materials ($M=4.44$, $SD=0.65$). Participants' ratings of their estimations of their ability to use CA data to create a community action plan improved significantly after receiving their NORTH STAR training $t\,(49)=2.57$, $p<0.05$), as did their beliefs that their efforts would be effective $t\,(49)=3.63$, $p<0.001$. We derived four implications from these results. First, survey results revealed an even more pressing need for community-based prevention than had been anticipated. Second, the NORTH STAR framework is understandable and appealing to prevention team members and installation leadership. Third, the materials developed support the implementation of NORTH STAR framework as it was designed. Finally, the NORTH STAR framework appears effective in facilitating bases' identification of key needs, and implementation of community-wide evidence-based activities to address those needs.

Randomized Controlled Trial (2006–2008)

Major command briefings. The first step of launching the RCT was briefing the Air Staff and all participating major commands on the results of the CA+, the plan for the NORTH STAR study, and the desired role of the major commands. These briefings were conducted in person, with one researcher and one AF member at all but one briefing. At these briefings, we emphasized the need for oversight and accountability, and requested that the major command IDSs hold bases participating in the trial accountable for developing community action plans and implementing them according to the timelines they propose.

Implementation. To address the challenges identified in the pilot, we made a number of slight adjustments in implementing the trial. First, when we recruited bases, we warned there would be a need to support the IDS in its implementation of its action plan either with human resources, money, or both. Second, through the air staff and major command briefings, we sought to increase accountability to those beyond the base community. Third, we included slides about the need for the base CAIB to hold the IDS accountable at the in-brief and in the IDS's out-brief that were part of each launch visit. Fourth, we asked each base to identify one member of the CAIB (by definition, a senior leader) to serve as the CAIB liaison to the IDS. This person did not attend IDS meetings, but was an agreed upon contact for the IDS to use when needing leadership input or support. Fifth, we connected bases implementing the same or similar programs, forming ''Communities-of-Practice'' across NORTH STAR base teams for mutual support. Sixth, we continued to build our technical assistance resources. For example, we developed a series of WWW evaluation planning tools that walked the team step by step through the evaluation planning process for any given activity in the guidebook, recommending possible measures and methods and providing sample data structures that could be downloaded. The evaluation planning tool had sections designed for each of the empirically supported programs included in the guidebook. The tool included segments on designing and implementing fidelity, process (or implementation), and outcome evaluations. Seventh, we maintained regular contact not only with IDS teams, but also with major commands and CAIBs through regular newsletters and other communications.

Largely, rollout proceeded similarly to how it was designed in the pilot. We were able to make the in-person training more efficient. All the planning was conducted in a single trip, and this session resulted in the development of detailed implementation plans that were briefed to the CAIB. All bases in the NORTH STAR condition received these training and planning visits between November 2006 and May 2007. Feedback reports were provided at these visits. Control bases received the same style feedback reports, but no systematic training or consultation. All bases received regular status calls to monitor their progress and to assess process measures of IDS functioning. All NORTH STAR bases developed reasonably strong initial action plans, including at least two evidence-based activities. The actual implementation of these activities varied. By October 2007 all NORTH STAR bases were encouraged to have at least one activity in the field. More than half the NORTH STAR bases met this goal. Two-thirds of the NORTH STAR bases met this goal. Those that did not meet this goal experienced resistance or frank lack of support from their CAIBs paired with turnover of key personnel. Two of these bases later recovered and implemented robust interventions following turnovers in the CAIB leadership. Technical assistance continued throughout the implementation. The 2008 CA+ was administered beginning in April 2008, which effectively marked the end of the implementation of activities.

Generally, implementation was much smoother and less challenging in the trial as compared with the pilot. That said, some challenges remained and are likely part and parcel of community based prevention efforts in the military. First, although the NORTH STAR approach is fairly robust to personnel turnover, turnover in key positions (e.g., the wing commander, IDS chair), especially when the transition is

from someone generally supportive of community prevention to someone who is notably less supportive does lead to a change in climate for action of this sort. Second, the timing of this trial placed it squarely within the context of two wars. As war efforts continued, human resources became more precious and often "hot topics" of the moment would compete for attention with the action plan implementation. Despite these challenges, however, two-thirds of NORTH STAR bases implemented some empirically supported activity – and one-third implemented strong, evidence-based action plans – which suggests NORTH STAR might be an effective community action framework.

Results. The results of the NORTH STAR effectiveness trial are encouraging (Slep et al., 2009). Encouraging results were found despite the study having very little statistical power to detect effects (i.e., the sample size is effectively 24, because base was the unit of randomization and analysis) and the intervention being done in this real world context, with 3 of 12 of the intervention bases failing to successfully implement any evidence-based activities.

NORTH STAR bases, compared with control bases, significantly reduced alcohol abuse and likely reduced child emotional abuse.[5] When controlling for IDS functioning and wing command support into consideration, NORTH STAR bases, compared with control bases, significantly reduced suicidality, prescription drug misuse, and partner physical abuse. Such interactive effects are becoming common in the prevention literature, suggesting that prevention programs' effects are more pronounced among people or communities that need prevention the most (e.g., Multisite Violence Prevention Project, 2009; Stice, Shaw, Bohon, Marti, & Rohde, 2009).

Further, NORTH STAR appeared to improve IDS team functioning while reducing the time and resource demands on team members, both on measures administered to the IDS (e.g., whether they used data in developing their community action plans, their expectancies that their action plans would work, increased empirical orientation in action plan development) and from objective ratings (e.g., the development of their action plans over time, how collaboratively the IDS worked). NORTH STAR improvements are most pronounced when IDS team faces adversity.

The general pattern that emerged is that NORTH STAR is significantly more effective than IDS with enhanced information under conditions of adversity (e.g., lower levels of IDS functioning, higher initial levels of risk).

Conclusions

The NORTH STAR experience provides several lessons for both military and civilian communities. First, the RCT results suggest that a structured, empirically driven approach to community prevention action planning can be effective for adult problems.

[5]Despite a relatively large effect ($d = 0.57$), this effect did not reach statistical significance.

Second, the variable IDS functioning is a cautionary tale of the difficulties of truly integrating the delivery of prevention activities across agencies. Military functional agencies, like their civilian counterparts, are funded and resourced to accomplish their primary aims and are expected to answer to the demands of their own leadership structure. In a now-permanent era of agencies being asked to do more and more with less and less, simply creating an agency consortium only will reduce agency burden and improve action if the agencies are doing duplicative work or if one or more influential members make prevention a top priority. Maintaining momentum to achieve prevention aims over time and across inevitable personnel changes becomes especially vexing.

NORTH STAR was designed to be sustainable outside the context of the research project, as the project worked with existing infrastructure (the IDS) and did not provide financial or personnel resources to accomplish the communities' goals. We reasoned that because AF communities are required to have an IDS and a regularly updated community action plan, NORTH STAR's empirically guided framework would reduce the burden on IDSs while improving their performances. To the extent that NORTH STAR worked and was especially important in communities that faced adverse conditions, these assumptions were true. To the extent that we believed that AF requirements would provide us, at each community, with a functioning prevention infrastructure on which to build, our assumptions did not match the situation on the ground.

Military communities differ from civilian communities in that readiness – the ability to carry out the military mission effectively – is the paramount concern, and thus the employer and service agencies all work for the same entity and have the same goals. However, because no one "owns" secretive problems (i.e., they impact readiness and often cut across several functional areas), no one functional area feels responsible to commit their extremely limited resources to targets other than their primary ones to achieve prevention. This is the classic "diffusion of responsibility" problem that social psychologists have described. Although an IDS approach could accomplish the goals of its designers, it is unlikely to without dedicated financial and personnel resources to plan, train, and enact the community action plan. Further, the IDS (and its component groups) is unlikely to make the action plan a priority without being inspected on its actions and expected, by all levels of the chain of command, to carry out its action plans.

In conclusion, leaders at all levels of military services are interested in "taking care of their own" and reducing the degradation of readiness that family maltreatment, substance problems, and suicidality produce. However, actions must be taken to mitigate diffusion of responsibility if effective approaches to preventing these problems are ever to take root.

Author Notes

Richard E. Heyman, Amy M. Smith Slep, John P. Nelson, Family Translational Research Group, Department of Psychology, Stony Brook University, State University of New York. Col. Fred Stone, United States Air Force.

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Appendix: Triple P (Ages birth-12)

Intervention targets			
Community	Organization	Family	Individual
		Child externalizing behavior problems (Levels 1–5) Parents' sense of competence (Levels 1–5) Parent–child relationships (Levels 1–5) Relationship satisfaction Family coping Child internalizing behavior problems (Levels 4 and 5 only)	Depressive symptoms (Levels 4 and 5 only) Personal coping Anxiety (Levels 4 and 5 only)

Description

Triple P ("Positive Parenting Program") is a multi-level family support strategy that aims to prevent severe behavioral, emotional, and developmental problems in children by enhancing the knowledge, skills, and confidence of parents.

Originally developed in Australia, Triple P was designed around the idea that parents have differing needs and desires regarding the type, intensity and mode of assistance that they may require. The Triple P system is designed to maximize efficiency, contain costs, and ensure that the program has wide reach in the community. Thus, Triple P consists of five possible levels of intervention for parents of children from birth to age 12. The five levels are of increasing intensity, as described below. Families can enter the Triple P system of intervention at any level. The system does not require families to progress from the least to most intensive level of intervention, although this may occur. Having completed one level of Triple P does not mean a particular family cannot complete another, and some families should certainly be encouraged to do so.

Level 1: A community-wide, multimedia parent information campaign. Goals include promoting awareness of parenting issues and normalizing participation in parenting programs such as Triple P.

Level 2: A very brief, 1- or 2-session primary care intervention for parents of children with mild behavior problems. Parents receive specific advice on how to solve common child developmental issues (e.g., potty training) and minor child behavior problems (e.g., bedtime problems).

Level 3: A brief primary care program for parents of children with mild to moderate behavior difficulties. The program combines advice with active skills training as required to teach parents to manage a discrete child problem behavior (e.g., tantrums, fighting with siblings).

Level 4: A broadly focused parenting program for parents who want or need intensive training in positive parenting skills (often, these are parents of children with more severe behavior problems). Parenting skills are taught and practiced across a range of target behaviors, settings, and children.

Level 5: An intensive, individually tailored program for families where parenting difficulties are complicated by other sources of family distress (e.g., relationship conflict, parental depression, and/or high levels of stress). Possible program elements include practice sessions to enhance parenting skills, mood management and stress coping skills, and partner support skills.

Minimal Implementation

Bases implementing Triple P as part of NORTH STAR may choose to apply any one or any combination of the five levels. Implementation by level involves the following:

Level 1: Community-wide use of print and electronic media and other health promotion strategies. May include some contact with professional staff (e.g., via telephone).

Level 2: Guidance with the aid of user-friendly parenting tip sheets and videotapes that demonstrate specific parenting strategies. May involve either (a) about 20 minute (total over two sessions) of face-to-face or telephone contact with a primary care service provider or (b) a 60–90 minute seminar. Level 2 providers may come from maternal and child health services, family health care, childcare centers, kindergartens, preschools, schools, and/or other community agencies that offer parent support.

Level 3: About 80 min (total over four sessions) of either face-to-face or telephone contact with a primary care service provider. Same potential providers as Level 2.

Level 4: About 10 h (total over 8–10 sessions). Possible formats include individual, group (groups usually consist of 10–12 parents), or self-directed (with or without telephone assistance) options.

Level 5: Up to 11 face-to-face, individualized sessions lasting 40–90 minute each.

Documented Results (Empirical Evidence: Best)

All five levels of Triple P are being rigorously validated (for reviews see Sanders, 1999; Sanders, Turner, & Markie-Dadds, 2002). In general, all five levels have been found to reduce child behavior problems, increase parents' sense of competence, and improve parent–child relationships. As might be expected, families who participated in more intense versions of the program generally tended to see more dramatic results. In addition, the two highest levels (i.e., 4 and 5) of Triple P have demonstrated the following effects:

- Reduced mothers' depression
- Reduced mothers' and children's anxiety
- Improved children's self-esteem
- Reduced parental stress
- Reduced marital conflict and increased marital satisfaction
- Improved parents' perceived ability to work together as a team

Resources Required

Required resources will vary greatly depending on the level(s) to be implemented. However, the materials and training necessary for any and all of the five levels are available from Triple P International or Triple P America. Training courses are conducted either at Triple P America headquarters in South Carolina or on-site and are available for levels 2 and 3 (combined) and levels 4 and 5 (combined or separate). Each course is presented to up to 22 trainees and lasts 3–6 days total, with the final day of training scheduled 6–8 weeks following completion of the rest of the course. Training ranges in price from about $500 to $1,500 per participant, plus travel, lodging, and materials.

Where to Find More Information

Triple P International
Email: info@triplep.net
URL: http://www.triplep.net

For training and materials in the United States, contact:

Triple P America
4840 Forest Drive #308
Columbia, SC 29206
Tel: (803) 787-9944
Email: triplepa@bellsouth.net
URL: http://www.triplep-america.com

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Part II
Parenting and Child Outcomes

Chapter 6
Child Maltreatment within Military Families

Deborah A. Gibbs, Sandra L. Martin, Monique Clinton-Sherrod, Jennifer L. Hardison Walters, and Ruby E. Johnson

Abstract Attention to child maltreatment within military families has grown in recent decades in response to the increasing numbers of children in military families, the broader evolution of child maltreatment policy and services, and the development of military policy on issues such as domestic violence. This chapter summarizes current understanding of child maltreatment in the military. Several characteristics of military populations and military life are likely protective with respect to child maltreatment. However, three aspects of military life may increase risks for child maltreatment: elevated rates of domestic violence among military families, increased prevalence of alcohol among service members, and deployment of service member parents.

Attention to child maltreatment within military families has grown in recent decades in response to the increasing numbers of children in military families, the broader evolution of child maltreatment policy and services, and the development of military policy on issues such as domestic violence. Among current active duty service members, 43% have children (ICF International, 2007), a sharp contrast to the era prior to World War II when the military was predominantly composed of unmarried males. This chapter summarizes current understanding of child maltreatment in the military, with particular attention to three aspects of military life that may increase risks for child maltreatment: high rates of domestic violence between parents, high rates of parental substance abuse, and deployment of the military parent.

Although policies related to children and families are typically established centrally by the Department of Defense (DoD), specific implementation strategies may vary among service branches. Service branches vary in terms of their populations' sociodemographic characteristics and family composition (ICF International, 2007); also

D.A. Gibbs (✉)
Division for Health Services and Social Policy Research, RTI International, Research Triangle Park, NC, USA
e-mail: dag@rti.org

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of note with respect to family violence are substantial variations in the prevalence of substance abuse among the service branches (Bray & Hourani, 2007). Within this chapter, the term "military" is used when discussing central policy or research findings based on at least two service branches; otherwise the specific service branch is identified.

Prevalence and Military Response

Comparisons of the extent of child maltreatment in military and civilian populations have yielded varying conclusions, although the strongest evidence appears to suggest lower rates in military populations (Rentz et al., 2006). Researchers have found disproportionally high rates of fatal child maltreatment in counties with large military populations (North Carolina Child Advocacy Institute, 2004), and high rates of shaken baby syndrome among children in military families who are admitted to pediatric intensive care units (Gessner & Runyan, 1995). However, comparisons of substantiated child maltreatment cases among Army families to those reported to the National Child Abuse and Neglect Data System (NCANDS) found that the national rate of child maltreatment was approximately twice as great as that seen among Army families. In particular, rates of child neglect were substantially higher in the national population than in Army families. Rates of physical abuse, sexual abuse, and emotional abuse among Army families were similar to those for families nationally (McCarroll, Ursano, Fan, & Newby, 2004; Raiha & Soma, 1997). Note that these comparisons do not adjust for the differences in demographic and socioeconomic characteristics of the military and civilian population, nor for differences in how child maltreatment incidents are investigated and categorized.

The military's response to child maltreatment is based in the Family Advocacy Programs (FAPs) established by regulation within each service branch (Department of Defense, 2004). FAPs are charged with prevention, identification, evaluation, and treatment of both child maltreatment and spouse abuse.[1] DoD defines child maltreatment as "physical injury, sexual maltreatment, emotional maltreatment, deprivation of necessities, or combinations for a child by an individual responsible for the child's welfare under circumstances indicating that the child's welfare is harmed or threatened" (Department of Defense, 2004, p. 6). Commanders and personnel in medical, social service, education, and law enforcement are required, and other personnel encouraged, to report known or suspected cases of child maltreatment to a designated point of contact on each installation.

All cases of child maltreatment involving active duty personnel (as either offending or non-offending parent) are investigated and assessed, then reviewed by

[1]FAPs have traditionally focused on violence between married couples and used the term "spouse abuse." More recently, FAPs have also addressed intimate partner violence incidents involving unmarried couples who cohabitate or who have children together.

multidisciplinary committees, whose members include personnel from social work, medical care, chaplain service, law enforcement, and criminal justice, as well as the service member's unit commander. This committee makes a determination of substantiation, based on the evidence of abuse and risk of further harm (Department of the Army, 2006).

On military installations within the United States, service providers typically establish memoranda of agreement recognizing the authority of local child protective service (CPS) agencies to investigate and manage cases involving military families, and the jurisdiction of local courts in adjudicate cases of child maltreatment, including those that occur on military installations. Even with civilian CPS involvement, FAPs make their own substantiation determinations, based on military definitions of child maltreatment and criteria for classifying severity. FAPs and civilian agencies may come to different decisions regarding substantiation as a result of differences between military definitions and those used by CPS agencies, which vary among states (Goldman, Salus, Woldott, & Kennedy, 2003).

Protective and Risk Factors for Child Maltreatment

Although military life is rightfully seen as challenging, several characteristics of military families are protective with respect to child maltreatment. Service members are screened prior to entry for serious mental health problems and criminal histories (McCarroll, Fan, Newby, & Ursano, 2008). Rates of illicit drug use, a major correlate of child maltreatment, are extremely low in military populations, estimated at 3% (within past 30 days), compared to 12% in a comparable civilian population (Bray & Marsden, 2000). Nearly 90% of military families with children include two married parents (ICF International., 2007), as compared with two-thirds of civilian families with children (U.S. Census Bureau, 2008). Of particular significance in the current environment, each military family has at least one parent employed full-time, with a steady income stream. Although military compensation is generally perceived as modest, a recent analysis suggests that the basic pay, housing and subsistence allowances, and associated tax advantages to which service members are entitled (collectively known as regular military compensation), exceed the 75th percentile for estimated earnings for civilians with some college education (Congressional Budget Office, 2007).

Risk factors for child maltreatment result from demographic and behavioral characteristics of military families, as well as from the circumstances of military life. Military families are often described as, "young families with young children." Most Active Component service members are under 25 years of age at the time of their first child's birth, and the majority of children in military families are age 7 years or less (ICF International, 2007). Military personnel have reported high rates of childhood maltreatment victimization, which may increase risks for subsequent perpetration of child maltreatment (Heyman & Slep, 2002; Merrill, Crouch, Thomsen, & Guimond, 2004; Rosen & Martin, 1996).

Some stressors on military families result from behavioral risks among service members. Alcohol abuse is more prevalent among military personnel than comparable civilian populations. Although rates of alcohol abuse vary among service branches, military personnel are more likely to drink alcohol, and nearly twice as likely to drink heavily, compared to civilians with similar socio-demographic characteristics (Bray & Marsden, 2000; Bray, Marsden, & Peterson, 1991). Because alcohol abuse is established as a strong correlate of domestic violence (Leonard, 2002; Pan, Neidig, & Oleary, 1994; Rosen, Parmley, Knudson, & Fancher, 2002; Strauss, Gelles, & Steinmetz, 1980), and with the severity of domestic violence (Bell, Hanford, McCarroll, & Senier, 2004; Brewster, Milner, Mollerstrom, Saha, & Harris, 2002; Rosen et al., 2002), it is not surprising that evidence suggests higher rates of domestic violence in the military than among civilians (Cronin, 1995; Rentz et al., 2006). Using standardized comparisons that adjust for age and race differences in military and civilian populations, Heyman and Neidig (1999) found that men's reports of moderate levels of husband-to-wife aggression were similar among U.S. Army and civilian samples (10–11%), but that adjusted rates of severe aggression were significantly higher in the standardized Army sample (2.5%) than in the comparable civilian sample (0.7%).

The specific stressors associated with the military environment include isolation from extended families, long work hours, involuntary relocations, and "geographically single" parenthood as a result of lengthy absences of the service member for temporary duty assignments, peacekeeping missions, or combat deployments (Segal & Segal, 2004). An estimated two million children in U.S. military families have been affected by deployments to Operation Enduring Freedom in Afghanistan and Operation Iraqi Freedom (Flake, Davis, Johnson, & Middleton, 2009), which represent the most extensive and sustained combat operations since the Vietnam era. Public attention to child maltreatment was in its infancy at that time, with the Child Abuse Prevention and Treatment Act established only in 1974 (42 U.S.C 5101). It is therefore not surprising that research on child maltreatment in relation to military deployment is only now emerging.

Domestic Violence and Child Maltreatment

The relationship between domestic violence and child maltreatment is well recognized, although describing the extent and nature of this relationship is complex. Children may be directly harmed during a domestic violence incident, intentionally or inadvertently, or they may be maltreated by a domestic violence victim whose parenting capacity has been diminished as a result of abuse (Bragg, 2003). Exposure to parental violence, whether by witnessing or overhearing abuse or observing its after-effects, also has numerous deleterious impacts for children, in that critical tasks of emotional and personality development may be disrupted as a result of the child's experience of vulnerability, shame, and dysfunctional models for adult relationships (Holt, Buckley, & Whelan, 2008). Exposure to domestic violence is

therefore considered as psychological or emotional maltreatment by some states (U.S. Department of Health and Human Services, 2009).

Numerous studies have documented that domestic violence and child maltreatment are often found within the same families. Reviews have found that between 30 and 60% of families experiencing either child maltreatment or domestic violence also reported the other form of violence (Edleson, 1999), with a median rate of co-occurrence estimated at 41% (Appel & Holden, 1998). Within a large representative sample of children who were subjects of investigations for child maltreatment, the lifetime prevalence of physical intimate partner violence reported by female caregivers was 45% (29% within the past year) (Hazen, Connelly, Kelleher, Landsverk, & Barth, 2004). Respondents in a large community sample who report having been victims of child maltreatment were 4–6 times more likely to report exposure to domestic violence in the household than those who did not report having experienced maltreatment (Dong et al., 2004).

Parents who perpetrate, or are the victims of, domestic violence have been found to have elevated rates of child physical abuse and child neglect perpetration (Herrenkohl, Sousa, Tajima, Herrenkohl, & Moylan, 2008). A reanalysis of data originally collected by Strauss and colleagues (1990) found that 23–24% of married parents who had committed physical violence against their spouse had also engaged in physical child abuse, with the likelihood of child abuse increasing among parents who had committed more acts of spousal violence (Ross, 1996). Mothers of young children who had experienced intimate partner violence were twice as likely to report having neglected their child (14 vs. 7%) and more likely to report physical aggression, psychological aggression and spanking (Taylor, Guterman, Lee, & Rathouz, 2009). Within military populations, a study of Army families estimated that child maltreatment was twice as likely to occur among families with a prior incident of spouse abuse (Rumm, Cummings, Krauss, Bell, & Rivara, 2000).

The authors examined nearly 3,000 married male Army soldiers who were child maltreatment offenders between 2000 and 2004, using data from the Army Central Registry, a confidential electronic information system documenting all child maltreatment and domestic violence incidents within soldiers' families worldwide. They found that 26% had also committed spouse abuse at the time of their initial child maltreatment incident (Martin, Gibbs, Johnson, et al., 2009). Compared to soldiers who committed only child maltreatment, those committing both spouse abuse and child maltreatment were less likely to be white (44 vs. 56%) and were more likely to be Black (42 vs. 32%), were more likely to be junior enlisted soldiers (pay grades E1–E3) (21 vs. 16%), and were more likely to be aged 25 or less (38 vs. 32%). Child neglect was the most common form of child maltreatment in both groups. However, child maltreatment offenders who were also spouse abuse offenders were more likely to commit child neglect (49 vs. 43%) and were less likely to commit physical abuse (16 vs. 42%), compared to those committing child maltreatment only, as shown in Table 6.1. Soldiers committing both spouse abuse and child maltreatment were far more likely to commit emotional abuse (45 vs. 12%), reflecting the fact that exposure to parental abuse can be considered as emotional abuse (Robichaux, 2006, personal communication). Offenders who committed both spouse abuse and child maltreatment were more likely to commit child maltreatment

Table 6.1 Type of child maltreatment perpetrated by married male soldiers with and without spouse abuse at time of the initial incident, 2000–2004

Type of child maltreatment	Offenders with both child and spouse offenses ($n=760$) *n* (%)	Offenders with child offenses only ($n=2{,}209$) *n* (%)	Chi-square *p*-value
Neglect	376 (49)	947 (43)	0.0017
Emotional abuse	339 (45)	257 (12)	<0.0001
Physical abuse	122 (16)	935 (42)	<0.0001
Sexual abuse	6 (1)	233 (11)	<0.0001

Source: Army Central Registry
Note: Because multiple forms of abuse can occur, types of abuse can add to greater than 100%

that was mild in nature, whether child neglect or physical abuse. They were also more likely to have substance abuse involvement in the incident (28 vs. 9%).

The presence of domestic violence, in either military or civilian families, complicates the determination of how best to protect the interests of the maltreated child. Non-offending parents may struggle to find strategies by which they can both protect themselves and shield their children from the abusing spouse. Protection of children is particularly challenging when the non-abusing parent is financially dependent on the abuser (Bragg, 2003). Abused parents may also fear losing custody of their children if they are perceived to have failed to protect them from the abusing spouse (Findlater & Kelly, 1999). Recognizing the potentially conflicting priorities and approaches of child welfare agencies and domestic violence service providers, the National Council of Juvenile and Family Court Judges published *Effective intervention in domestic violence and child maltreatment cases: Guidelines for policy and practice* (National Council of Juvenile and Family Court Judges, 1999). This document, known as the Greenbook, advocates collaboration for victim protection and accountability for offenders as a guiding principle, with four fundamental recommendations: (1) focusing on safety, permanency, and well-being for children and families; (2) keeping children in the care of non-offending parents when possible; (3) offering multiple points of entry to services; and (4) providing differential responses that facilitate services without necessarily opening child protection cases.

Although the military's response to domestic violence continues to be critiqued (Rosenthal & McDonald, 2003), several aspects of its policy and services are consistent with core Greenbook recommendations. First, the military's ability to focus on the well-being of children affected by parental abuse is facilitated by the existence of a single service agency (the FAP) addressing both child maltreatment and domestic violence, and the fact that FAP clinicians are trained in both areas. The authors' survey of Army FAP clinicians found that 80% reported handling both types of cases, and that 87% had attended the Army's Family Advocacy Staff Training Course, which includes discussion of co-occurring child maltreatment and spouse abuse.

Second, the military is able to keep children in the care of the non-offending spouse by removing domestic violence offenders from the home. Within the Army, options for protecting child maltreatment victims include removing the offender from the home, either by ordering soldiers to quarter in installation barracks or by rescinding permission for a civilian offender to remain on the installation

(Department of the Army, 2006). The authors' examination of child maltreatment incidents in the Army found that offenders were more likely to be removed from the home than children, particularly in incidents involving co-occurring spouse abuse or substance abuse (Gibbs et al., 2008). The military also provides transitional compensation to abuse victims in cases that result in offending soldiers' being separated from the military for reasons related to spouse abuse or child maltreatment. Under this program, dependents are eligible to receive financial support, medical and other benefits similar to what they would receive if married to the soldier for up to 36 months (Department of Defense, 2007).

Third, spouse abuse victims have available multiple points of entry to services, which can potentially facilitate the safety of children in the home. Army regulation requires that FAP services for spouse abuse victims include victim advocates, who provide crisis intervention, assistance in accessing medical care, information on legal rights and procedures, and referrals to needed services (Department of the Army, 2006). In addition, among FAP clinicians who report that civilian domestic violence service providers exist in their area, nearly all (96%) report collaborating with them (Hardison Walters, Clinton-Sherrod, Gibbs, & Martin, 2008). Recognizing that some victims may be deterred from reporting abuse by concerns about repercussions on the offender's military career, the military also offers the option of restricted reports that provide access to medical and advocacy services without requiring command or law enforcement involvement (Department of Defense, 2007).

Finally, FAPs are well positioned to implement differential response to children exposed to parental violence, as recommended by the Greenbook, by virtue of their dual focus on domestic violence and child maltreatment. In the Army, for example, practice guidelines consider such exposure as maltreatment only when there is demonstrated distress or harm to the child (Robichaux, 2006, personal communication).

Substance Abuse and Child Maltreatment

The intersection of child maltreatment and the abuse of alcohol and other drugs is well established (De Bellis et al., 2001; Famularo, Kinscherff, & Fenton, 1992; Haller & Miles, 2003; Jaudes, Ekwo, & Van Voorhis, 1995; Kelleher, Chaffin, Hollenberg, & Fischer, 1994; Leonard, 2002; Walsh, MacMillan, & Jamieson, 2003). As with domestic violence, estimates of the extent to which substance abuse co-occurs with child maltreatment vary widely according to the population, data collection methods, and measures used. Studies based on clients of child welfare systems generally estimate that between one- and two-thirds of substantiated child maltreatment cases involve offender substance abuse (Besinger, Garland, Litrownik, & Landsverk, 1999; Curtis & McCullough, 1993; Lung & Daro, 1996; National Center on Addiction and Substance Abuse at Columbia University, 1999; Semidei, Radel, & Nolan, 2001). In studies of community samples, rates of child maltreatment are estimated to be two to three times higher among children of substance-abusing

parents (Chaffin, Kelleher, & Hollenberg, 1996; Walsh et al., 2003). In addition, substance abuse has consistently been associated with intimate partner violence (Coker, Smith, McKeown, & King, 2000; Dube et al., 2001; Leonard & Eiden, 2007; Strauss et al., 1980), which in turn is associated with child maltreatment.

Child maltreatment cases involving substance abuse differ from those without substance abuse in several respects. Two case record reviews found that substantiated child maltreatment cases involving substance abuse were more likely than others to involve physical neglect, and were less likely to involve physical abuse or sexual abuse, with no differences noted in emotional abuse (Besinger et al., 1999; U.S. Department of Health and Human Services National Center on Child Abuse and Neglect, 1993). Offender substance abuse has also been associated with increased maltreatment severity (Sprang, Clark, & Bass, 2005; Walsh et al., 2003) and recurrence (English, Marshall, Brummel, & Orme, 1999; McDonald, 1990). In addition, children from families in which substance abuse is present are more likely than others to be placed in foster care (U.S. Department of Health and Human Services, 1999).

The authors' examination of Army data for substantiated cases of child maltreatment over a 5-year period found that 13% of soldiers who committed child maltreatment were noted to have been abusing alcohol or other drugs at the time of their first child maltreatment incident (Gibbs et al., 2008). Substance abuse in these cases was far more likely to involve alcohol (89% of offenders) than illicit drugs (6% of offenders) or both alcohol and illicit drugs (5% of offenders). Offenders whose first child maltreatment incident involved substance abuse were more likely than others to be male than female (OR = 1.99, 95% CI = 1.50–2.66), married rather than single (OR = 1.83, 95% CI = 1.25–2.67), and non-Hispanic White rather than Black or Hispanic (OR = 1.30, 95% CI = 1.08–1.56). They were also much more likely to have been referred to substance abuse services prior to the child maltreatment incident (OR = 5.30, 95% CI = 3.98–7.06). Offender substance abuse at the time of the child maltreatment incident did not vary by pay grade or soldier age.

The type of child maltreatment committed varied substantially among offenders with and without substance abuse, as seen in Table 6.2. Offenders who were noted to have substance abuse at the time of their first incident were more likely to commit

Table 6.2 Type of child maltreatment perpetrated by soldiers with and without substance abuse at time of the initial incident, 2000–2004

Type of child maltreatment	Offenders with substance use at time of first incident (n = 522) n (%)	Offenders without substance use at time of first incident (n = 3,437) n (%)	Chi-square p-value
Neglect	286 (55)	1,627 (47)	0.0015
Emotional abuse	159 (30)	617 (18)	<0.0001
Physical abuse	90 (19)	1,238 (36)	<0.0001
Sexual abuse	25 (5)	206 (6)	0.2741

Source: Army Central Registry

Note: Because multiple forms of abuse can occur, types of abuse can add to greater than 100%

Note: Data on whether substance abuse was indicated at time of incident was missing for 296 (6.96%) of 4,255 child abuse offenders

child neglect (55 vs. 47%) or emotional abuse (30 vs. 18%), and less likely to commit physical abuse (19 vs. 36%). Child neglect was nearly twice as likely to be severe in nature when the offender was also noted to have substance abuse involvement (OR 1.97, 95% CI = 1.36–2.84, data not shown).

Higher levels of emotional abuse among offenders with substance abuse involvement suggest that many of these incidents also involve child exposure to spouse abuse. In fact, substance abuse was much more likely among child maltreatment offenders who also committed spouse abuse on the same day as the child maltreatment incident than those who committed only child maltreatment (37 vs. 17%, data not shown).

Offenders whose first child maltreatment incident involved substance abuse were no more likely than others to have subsequent child maltreatment incidents. However, longitudinal analyses revealed that these offenders exited the Army more quickly than those whose child maltreatment incident did not involve substance abuse (median length of stay 3.5 and 4.7 years, respectively, $p < 0.05$).

As previously noted, the military has greater latitude than civilian CPS agencies to protect child victims by removing offenders from the home. Figure 6.1 shows that among Army families, this option was more likely to be exercised in response to child maltreatment incidents involving substance abuse than those that did not (23 vs. 15% of incidents) and even more likely to be used when both spouse abuse and substance abuse co-occurred with child maltreatment (50%). Situations involving greater likelihood of offender removal from the home were correspondingly less likely to result in children being removed from the home.

Several themes emerge from these analyses. The level of substance abuse involvement in child maltreatment appears to be substantially lower in Army families

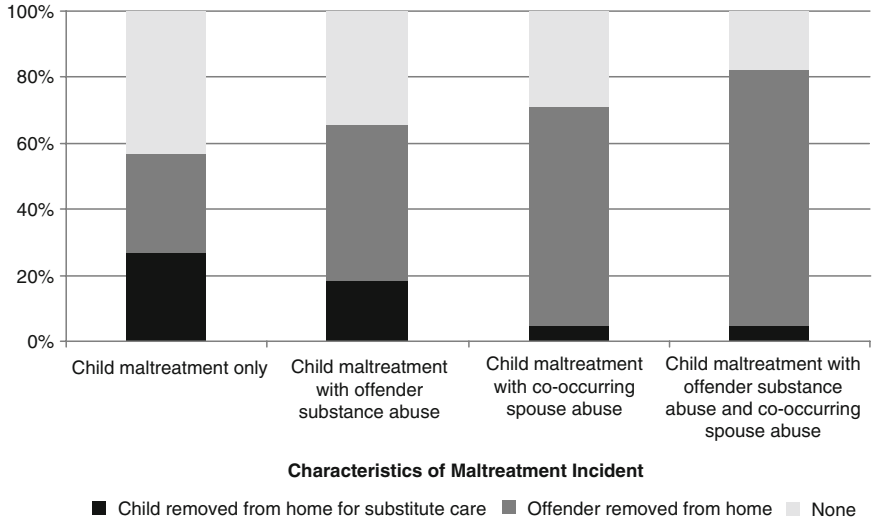

Fig. 6.1 Victim protective actions in child maltreatment incidents by soldier offenders with and without co-occurring substance abuse and spouse abuse at time of initial incident, 2000–2004

(and likely in other service branches) than that estimated for civilian populations. Although the variations in population characteristics, measures and the circumstances of data collection make direct comparison inappropriate, it is plausible that the low levels of illicit drug use in the military (Bray & Hourani, 2007) account for much of this difference. Few studies of child maltreatment in civilian populations differentiate between parental alcohol abuse and illicit drug use; however, the increase of substance abuse within child welfare caseloads is frequently attributed to the introduction of crack cocaine in the 1980s (Curtis & McCullough, 1993; Magura & Laudet, 1996).

The increased prevalence of child neglect among child maltreatment involving substance abuse within the Army (Gibbs et al., 2008) is similar to that noted in civilian populations (Besinger et al., 1999; U.S. Department of Health and Human Services National Center on Child Abuse and Neglect, 1993). This is notable in light of the fact that rates of child neglect are generally lower in the military than in civilian populations (McCarroll et al., 2004; Raiha & Soma, 1997). The lack of association between substance abuse involvement and recurrent maltreatment is likely attributable to the military's ability to separate service members with severe substance abuse problems, particularly when illicit drugs are involved (Department of Defense, 1999). These offenders may commit subsequent child maltreatment offenses, but will not be captured in Army data. An additional key finding is the dual association of substance abuse with both child maltreatment and spouse abuse, reflecting both the prevalence of substance abuse during spouse abuse incidents and the Army's policy of considering exposure to parental violence as emotional abuse if it creates significant distress for the child.

As with co-occurring spouse abuse, the military service delivery system can facilitate response to families with co-occurring substance abuse and child maltreatment. Although family advocacy and substance abuse services in each service branch are administratively separate, they exist within the same larger organization, and are typically both located on the installation. Assessment protocols for each agency require clinicians to screen for co-occurring problems and refer identified cases to the appropriate agency. The authors' survey of clinicians from the Army's FAP and the Army Substance Abuse Program (ASAP) identified substantial coordination among the two agencies (Hardison Walters et al., 2008). Among FAP clinicians, 78% report referring the majority of child maltreatment cases in which substance abuse is suspected to ASAP; among ASAP clinicians, 57% report referring the majority of substance abuse cases in which child maltreatment is suspected to FAP. However, some clinicians reported they may choose to not refer some cases with suspected co-occurrence, depending on the seriousness of the risk to the victim, the level of evidence indicating co-occurrence, and other factors (Clinton-Sherrod & Gibbs, 2009).

To increase the coordination between FAP and ASAP, each agency offers training to the other, as well as to other professionals on the installation. Among FAP clinicians, 87% report having attended the FAP-sponsored Family Advocacy Staff Training, which addresses the co-occurrence of family violence and substance abuse, and 33% report having attended additional training on substance abuse while

in their current positions. Among ASAP clinicians, nearly half (46%) report having attended the Family Advocacy Staff Training, and 71% report having attended another training on child maltreatment.

Deployment and Child Maltreatment

Deployments of service member parents have been associated with increased stress for both parents and children, although much of the available research in this area is based on relatively short combat deployments (e.g., the Persian Gulf War of 1990–1991) or peacekeeping missions such as those in Bosnia in 1995. Both peacetime and combat deployments have been linked to emotional and life stress (Rosen, 1995; Rosen, Durand, & Martin, 2000), higher divorce rates (Schumm, Bell, & Gade, 2000), and the occurrence of spousal violence (McCarroll et al., 2000) within Army families. For parents, deployments likely require the parent remaining at home to assume all parenting and household management responsibilities, creating a situation similar to that of single parents, who have been shown to experience increased risks of child maltreatment (Egeland & Brunnquell, 1979; Sedlak & Broadhurst, 1996). Within families of Marines and Army soldiers, deployments have been associated with increased stress (Haas, Pazdernik, & Olsen, 2005; Jensen, Grogan, Xenakis, & Bain, 1989; McNulty, 2003) and depressive symptoms (Jensen, Martin, & Watanabe, 1996) among non-deployed parents. These reactions may hamper their ability to appropriately care for children.

Deployments may also distress children due to their separation from the deployed parent. Children of deployed Army soldiers have been found to report elevated depression and anxiety (Barnes, Davis, & Treiber, 2007; Jensen et al., 1989, 1996; Jensen, Xenakis, & Wolf, 1991), although generally not to clinical levels, and high risk for psychosocial morbidity (Flake et al., 2009). Higher levels of fearful behavior have been reported for children of deployed Army soldiers (Rosen, Teitelbaum, & Westhuis, 1993), and of deployed mothers in the Navy (Kelley et al., 2001; Rosen et al., 1993), although differences were modest. Elevated behavior problems have been reported among children of Marines deployed to Iraq and Afghanistan, compared to those without deployed parents (Chartrand, Frank, White, & Shope, 2008), and among children whose fathers were deployed to the Persian Gulf War, compared to those on routine Navy deployments (Kelley, 1994).

The demonstrated association between deployments and both parental stress and child behavior problems, and evidence of greater stress during combat deployments than peacetime operations, suggests the possibility of increased risk of child maltreatment during combat deployments. Three recent studies, each using different methods, suggest this is in fact the case.

McCarroll and colleagues examined trends in substantiated reports of child maltreatment in the Army Central Registry between 1990 and 2004, encompassing both the Persian Gulf War and more recent conflicts (McCarroll et al., 2008). Between 1990 and 2000, the overall rate of child maltreatment declined from 6.92 to 4.65 per

1,000 children. The rate then increased, reaching 5.44 per 1,000 in 2004, an increase of 17%. Observed trends differed by type of maltreatment. The rate of child neglect increased between 1990 and 1991, coinciding with the Persian Gulf War, and then decreased between 1991 and 2000. However, rates of child neglect began to increase in 2001, and continued an upward trend through 2004. During the same time period, rates of both physical abuse and sexual abuse decreased steadily, and rates of emotional abuse unevenly. Thus, the increase in overall rates of child maltreatment after 2000 is attributable to increases in child neglect, the most prevalent form of maltreatment. The increase in neglect was limited to cases involving children ages 8 years or less, but was most pronounced among children ages 2 years or less.

A second study examined cases of child maltreatment reported between 2000 and 2003 to the NCANDS, the national reporting system maintained by the U.S. Department of Health and Human Services (Rentz et al., 2007). NCANDS records indicate whether the child victim was a legal dependent of an active duty service member. The study focused on Texas, a state with a large military population, in which data on the NCANDS data on military family status were particularly complete. Prior to October 2002, the rate of substantiated maltreatment for children in military families was 37% lower than for children in nonmilitary families. However, after October 2002, and coincident with the initiation of large-scale deployments among Texas military personnel, the rate of substantiated child maltreatment was 22% higher among children in military families. The rate of occurrence of substantiated maltreatment doubled in military families during months in which the percentage of departures to, or return from, operational deployments increased by at least 3%. The greatest increase was in maltreatment incidents by nonmilitary parents.

These two studies identified substantial increases in child maltreatment during times of large-scale deployments, but did not establish family-specific relationships between combat deployments and child maltreatment incidents. Therefore, the authors examined all incidents of child maltreatment among Army families between September 2001 and December 2004 to compare rates of child maltreatment during times of combat deployment of the soldier parent to rates at other times (Gibbs, Martin, Kupper, & Johnson, 2007). Among families with at least one substantiated incident during the study period, the rate of child maltreatment during deployment of a soldier parent was 42% higher than at times of non-deployment. However, the rate of substantiated child maltreatment by female civilian parents was more than three times greater during periods of deployment of the soldier parent than at other times (rate ratio = 3.33, 95% CI, 2.98–3.67). Rates of neglect by female civilian parents were nearly four times higher during deployments (rate ratio = 3.85, 95% CI, 3.34–4.36) and rates of physical abuse nearly doubled (rate ratio = 1.91, 95% CI, 1.58–5.15). With some variation in degree, increased rates of child maltreatment by female civilian parents during deployments occurred regardless of severity of maltreatment, parent demographics, child age and soldier pay grade.

Preliminary results from this analysis were discussed with Army service providers who confirmed that the findings were consistent with cases being reviewed by Family Advocacy Programs on their installations. “It’s mostly neglect,” said one installation physician when asked about child maltreatment during deployments.

"[Parents] and all their neighbors and friends are overwhelmed, and they cannot take care of each other. And it gets worse during the year. First, some help each other, but then they struggle to even take care of themselves." Army clinical social workers reported that cases frequently involve young parents caring for several young children, problems with child supervision and household organization, and lack of engagement with support networks. Civilian CPSs managers in surrounding communities confirmed the need for outreach. One noted that the families of deployed soldiers "completely feel unsupported, and yet there's all this support around … With a civilian family it's more difficult because they've got waiting lists, but the military is about supporting families."

Taken together, these three studies confirm the need for additional supportive and preventive child maltreatment services for military families during times of deployment. Consistent with its goal of preventing and alleviating child maltreatment (Department of the Army, 2006), the Army supports a range of resources for families during soldier deployments. Although services vary among installations, these may include respite child care, home visiting for families of infants, and support groups for spouses of deployed soldiers. Participation in these services is voluntary, however, and parents experiencing stress may not take advantage of available resources. Noting reported increases in child maltreatment during soldier deployments, the Army's Acting Surgeon General instructed medical providers treating spouses of deployed soldiers to inquire about the soldier's deployment status, assess the civilian parent's well-being, and make referrals to services as indicated (Pollock, 2007, Memo to U.S. Army medical commanders, personal communication). Research findings suggest that priorities during times of deployment also should include development of services that parents at greatest risk will seek out and accept, and enhanced outreach to connect parents to services.

Future Outlook

The preceding review identifies several ways in which the characteristics of military families and the military environment influence risks for child maltreatment. Some of these are protective, such as two-parent families, stable income, and low rates of illicit drug use. Others increase risks, including high rates of alcohol abuse, high rates of domestic violence, and family stress associated with deployments. Opportunities for future research lie in continued efforts to better understand which families are specifically at risk and to strengthen prevention and treatment services.

A fundamental topic for further research is the description of child maltreatment incidence and patterns across service branches. Existing research on substantiated child maltreatment is largely based on Army families, as evidenced in this chapter. This is understandable in light of the greater presence of children within Army families, both in absolute numbers and in the percentage of families with children. Yet the Army includes less than half (approximately 40%) of military families with children, compared to 25% each for the Air Force and Navy, and 10% for the

Marines (ICF International, 2007). Better understanding of patterns of child maltreatment in all branches could inform understanding of risk factors and opportunities for intervention.

Another opportunity lies in better understanding of the influence of alcohol-involved domestic violence on child maltreatment, and service responses to parents engaged in these behaviors. High rates of alcohol abuse (Bray & Hourani, 2007) and domestic violence (Heyman & Neidig, 1999) have been documented in military populations, along with the relationship between alcohol abuse and domestic violence among service members (Bell et al., 2004; Brewster et al., 2002; Fonseca et al., 2006; McCarroll, Fan, & Bell, 2009; Merrill, Hervig, & Milner, 1996; Rosen, Kaminski, Parmley, Knudson, & Fancher, 2003). Although domestic violence and offender substance abuse have both been associated with child maltreatment in Army families (Gibbs et al., 2008; Martin, Gibbs, Sulliven, et al., in press), descriptive analyses using Central Registry data alone are not adequate to understand the dynamics of this relationship. The military presents unique opportunities for coordinated services addressing co-occurring substance abuse and domestic violence, but the authors' survey of Army providers suggest that coordination between these agencies could be improved (Hardison Walters et al., 2008). Additionally, the effectiveness of existing interventions and service delivery strategies has not been assessed with respect to parenting outcomes.

Several lines of research could support a better response to parents engaged in or at risk of domestic violence, particularly when alcohol-fueled. First, analyses utilizing multiple data sets could better disentangle the complex relationships between domestic violence, substance abuse, and child maltreatment. Topics could include clarification of the extent to which children are physically harmed, neglected, or emotionally distressed as a direct result of domestic violence incidents, as well as the separate and combined impacts of substance abuse and domestic violence on child maltreatment incidence. Second, effectiveness evaluations are needed for interventions currently offered to address substance abuse and domestic violence, as well as trials in military populations of interventions addressing both issues, such as behavioral couples therapy (Fals-Stewart, O'Farrell, Birchler, Cordova, & Kelley, 2005). Third, assessments are needed for strategies to engage and retain military couples in available services. Such strategies are of particular importance with respect to civilian spouses who cannot be required to participate in services as service members can, and for parents whose substance abuse or domestic violence may not come to the attention of either the command structure or service delivery system.

Finally, several specific aspects of ongoing combat operations suggest priority areas for attention. Recent research has conclusively demonstrated an increased incidence of child maltreatment associated with combat deployments, suggesting the need for focused attention to those families at greatest risk. Current combat operations are distinguished by large-scale and lengthy deployments, with truncated intervals separating repeated deployments (Hosek, Kavanagh, & Miller, 2006). In 2008, the Army reported that more than half of active-duty service members have been deployed at least once; of these, 40% have experienced multiple deployments

(Shanker, 2008). Advances in body armor and medical care have increased casualty survival rates, but left unprecedented numbers of service members – and their families – to deal with the "invisible wounds" of combat deployments, including posttraumatic stress disorder, major depression, and traumatic brain injury (Tanielian et al., 2008). Approximately 20% of service members returning from combat deployment report mental health conditions warranting clinical attention (Milliken, Auchterlonie, & Hoge, 2007), with 14% reporting concerns regarding interpersonal conflict. With a smaller post-Cold War active duty force, Reserve Component members have comprised 30% of deployed troops (Castaneda et al., 2008).

In this context, the need for long-term assessment of the impact of OEF/OIF deployments on child maltreatment is clear. First, what is the impact of repeated and extended combat deployments on families? Are at-risk parents identified and connected to services during initial deployments, do they seek support from extended families, or are these families at particular risk for child maltreatment? Second, what are the long-term impacts on family violence among service members experiencing mental health problems during the months and years following their return from combat deployment? Considering extensive evidence of the long-term impact of PTSD on spousal violence (Jordan, Marmar, Fairbank, & Schlenger, 1992), will these families also experience increased rates of child maltreatment, either by service members or by civilian parents dealing with the stresses of caring for a spouse with mental health issues? Third, what have been the impacts of combat deployment on child maltreatment among families of Guard and Reserve Component personnel, whose families rarely have access to the community support and service resources that are routinely available to active-duty personnel?

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Chapter 7
Attachment Ties in Military Families: Mothers' Perception of Interactions with Their Children, Stress, and Social Competence

Germán Posada, Nancy Longoria, Casey Cocker, and Ting Lu

Abstract Families with deployed military parents endure substantial separations during which children and "at home" partners experience periods of drastically reduced availability from the deployed member and changes in the dynamics and relationship structure of the home. Little is known about whether deployment experiences and stressors associated with them are linked to caregivers' ability to provide sensitive care, children's ability to use their parents as a secure base, and children's exchanges with others outside the home. Analyses of data based on mothers' reports, indicate that indices of maternal caregiving quality decrease as mothers' perceived stress increases. Similarly, maternal quality of care increases as perceived social support increases. Further, indicators of quality of maternal care were associated with children's markers of security, and both, quality of care and security were in turn associated with children's social competence with peers.

A substantial number of military families face stressful times due to conditions of war and deployment. In 2007, approximately 43% of the 1.4 million active duty personnel had one or more dependent children (Office of the Deputy Under Secretary of Defense 2007). Over half of these dependent children were 7 years of age or younger, with children under 6 years representing the largest percentage (41%) of minor dependents (Office of the Deputy Under Secretary of Defense, 2007). Families with deployed military parents endure substantial separations during which children and "at home" partners experience periods of drastically reduced availability from the deployed member and changes in the dynamics and relationship structure of the home. Little is known about whether deployment experiences and stressors associated with them are linked to the caregiver's ability to provide sensitive care, children's ability to use their parents as a secure base, and children's exchanges with others outside the home.

Attachment theory (Ainsworth, Bell, & Stayton, 1971; Bowlby, 1969/1982, 1988) proposes that child–parent attachment relationships provide a key arena wherein

G. Posada (✉)
Department of Child Development and Family Studies, Purdue University,
West Lafayette, IN 47907, USA
e-mail: gposada@purdue.edu

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children acquire and practice skills and interaction strategies, and develop expectations and representations about themselves, others, and relationships that importantly influence their development. Further, attachment researchers (e.g., Ainsworth, Blehar, Waters, & Walls, 1978; Bowlby, 1988) posit that attachment relationships are context sensitive. That is, the ecology where the child–caregiver takes place influences in important ways their relationship. Thus, child–parent interactions and ultimately relationships are likely to be influenced by the specific experiences and circumstances (e.g., deployments, separations, stress, and changes in family structure) surrounding military families, as are children's socialization processes and outcomes. The influence of those events may also be importantly modified by the quality of child–parent exchanges and the kinds of support available to families.

The purpose of this chapter is to bring to the forefront information about attachment theory and research that may be of relevance when considering the circumstances surrounding the development of children in military families during these times of active and extensive international armed conflict. A second aim is to present preliminary empirical data that speaks to the issue at hand, namely, attachment relationships in child–mother dyads from military families. In the following, we first describe central features of the Bowlby–Ainsworth perspective on attachment relationships that are relevant to present day military families. Next, we present information about key hypotheses concerning child–mother attachment relationships gathered in a sample of military families with a deployed member. We collected information from mothers to examine three key issues: (1) the association between indices of quality of maternal care and child behavior indicative of security, (2) the relations between characteristics of the context surrounding the child–mother dyad and both quality of maternal care and child security, and (3) the associations between children's behavior indicative of security and socialization outcomes. We will discuss these preliminary findings in light of empirical evidence available to date. We hope to make the case that lessons learned from research conducted on attachment relationships apply as well to military families. At the same time, we argue for the importance of investigating the current experiences and conditions military families live in, and the impact that such factors may have on child–caregiver attachment relationships (a key context for development) and on children's socialization outcomes.

The Bowlby–Ainsworth Perspective: Some Relevant Issues

Attachment theory is concerned with the development of infant/child–caregiver relationships, the maintenance of such relationships thorough the lifespan, and the role those relationships play in future close relationships and individual development. Important characteristics of the theory include its (1) integrative perspective, as the theory draws together notions from evolutionary, ethological, control-systems, psychoanalytic, and cognitive psychology theories in an attempt to explain the construction and elaboration of attachment relationships; (2) dialog between

empiricism and theory elaboration; and (3) potential range of implications and applications to central domains of people's lives, e.g., intimate relationships, self, and emotional security, among others.

Current military families face many experiences and circumstances that are directly related to issues central to the Bowlby–Ainsworth perspective. Some of those issues have to do with the formation and elaboration of attachment relationships through time, the importance of real-life relationship experiences and significant separations from attachment figures, the different kinds of attachment relationships and the relevance of variations in quality of care in the formation and maintenance of those relationships, the role that contextual factors (e.g., stress) play in the provision of quality of care, and the importance of attachment relationships for children's social development.

Attachment Relationships Take Time to Be Constructed

Attachment is an emotional bond that an infant/child forms with a caregiver in the course of recurrent interaction. This bond is specific, enduring, and ties the dyad across contexts. One of Bowlby's key insights was to suggest attachment as a relational outcome tied to interaction experience in time. To be clear, although Bowlby referred to attachment as the child's emotional bond towards his or her main caregiver(s), he also discussed, at considerable length (e.g., Bowlby, 1969/1982) its dyadic nature, placing child–mother (caregiver) exchanges and the contributions of *each* member of the dyad at the center of the phenomenon. Further, infants are not born emotionally attached to their mother/caregiver, nor does attachment appear at once. It takes time to be constructed, consolidated, elaborated, and maintained. By the end of the first year, infants typically have formed an attachment bond to their main caregivers. Indeed, Bowlby (1969/1982) proposed four phases in the development of an infant's attachment bond to his mother: Limited social discrimination, discrimination of and preference for main caregiver(s), maintenance of proximity to attachment figure(s), and goal-corrected partnership.

The first phase, "limited discrimination of figures," acknowledges that newborns are not emotionally attached to their caregivers and thus they do not prefer anyone. They tend to respond similarly to any individual who tends to their signals or interacts with them. Importantly, babies contribute to their interactions and exchanges with others from the beginning. Built-in bias to orient towards, look at, and listen to certain stimuli will favor paying attention to those who interact with him/her and provide care.

In the course of everyday exchanges, infants experience recurrent patterns of interaction and care from those looking after them, typically but not necessarily the infant's biological parents. Thus at around 2 months or so, infants begin to exhibit "discrimination of and preference for main caregivers." Those repeated interaction experiences allow babies to learn the perceptual and behavioral features of their caregivers and differentiate them from other individuals. Repeated exposure with

patterns of care leads to familiarity with those figures and their interaction routines. Familiarity leads to preference (Bowlby, 1969/1982; Waters, Kondo-Ikemura, Posada, & Richters, 1991). The infant continues to be friendly and open, but now distinguishes his or her caregivers from others and responds differently to them (see Ainsworth, 1967).

During these first months, experience, that is, practice, establishes the secure base phenomenon foundations: The baby signals, mother comes close and joins the child in interaction, either cooperating with the baby's behavior and vocalizations, or solving the discomfort the child is experiencing. The mother (or caregiver) expands the infant's activities in time and space, and/or restructures the infant's behavior and context in ways that the infant is comfortable and/or can re-engage her/his surroundings. These experiences are likely to provide the behavioral and cognitive substrates for the rapid appearance of the secure base phenomenon soon after the child develops locomotion.

The phase of maintenance of proximity to attachment figure(s), or the phase of attachment proper begins soon after locomotion arises. The infant's way of participating is now more complex. Behavior becomes organized in a goal-corrected basis. Not only do infants orient and signal towards their main caregiver(s), but in addition, they are active in approaching and maintaining proximity by crawling and/or walking. Their motor behavior is increasingly more integrated and efficient and thus they can use it to achieve their goals for proximity and contact when the situation requires it (e.g., to play, explore surroundings, check on a visitor, or a new place). Strangers are treated with caution and attachment figures clearly preferred. The foundations of the secure base phenomenon are in place and readily observable by 1 year of age in most children from diverse backgrounds (Posada et al., 1995). This does not imply that development is complete. Although established, it needs to be consolidated (Waters et al., 1991). There is no reason to suggest that this complex phenomenon emerges fully developed. Its temporal and spatial parameters will be solidified and reworked as practice and new representational abilities and circumstances allow. Here it is important to remember that the organization of an infant's behavior is closely tied to that of the attachment figure (Ainsworth et al., 1978; Posada, Carbonell, Alzate, & Plata, 2004). That is, secure base support is essential in maintaining the organization of an infant's secure base behavior.

The last phase in Bowlby's developmental model is labeled the goal-corrected partnership. By continuously participating in interactions with mother, and observing maternal behavior and the factors that influence it, the child begins to conceive of the mother as an individual with her own set goals and plans to achieve them. Thus, according to Bowlby (1969/1982), at around a child's third year, a partnership begins where children will increasingly modify their behavior and expectations based on those of the attachment figure. Here the rudiments of a goal-corrected partnership, one that will eventually move the child–mother relationship increasingly and slowly towards a more symmetrical one. Bowlby was general about this phase and did not elaborate much.

Early childhood is a period during which the organization of secure base behavior continues to be co-constructed by the members of the dyad in the context of

changes in children's motor, cognitive, social, and language skills and of an increased knowledge of their environment and the persons in it. Preschoolers' use of attachment figures a secure base becomes increasingly sophisticated. Furthermore, during this period the use of representational systems (e.g., language) in children's exchanges with their surroundings clearly become more salient, and modes of communication and the organization of information regarding child–mother interactions take on a more complex mode (Bretherton & Munholland, 2008; Waters, Rodrigues, & Ridgeway, 1998).

Empirical work on the dyadic nature of these relationships or about child–mother interactions during childhood in naturalistic contexts, however, is not as abundant as that of infancy. Although there are some valuable studies as to how child–mother attachment relationships during the preschool years may be, the picture of what transpires in those relationships, or the processes involved in their maintenance and change is just emerging (e.g., Bretherton, Ridgeway, & Cassidy, 1990; Greenberg, Cicchetti, & Cummings, 1990; Marvin & Britner, 2008; Posada, Kaloustian, Richmond, & Moreno, 2007; Waters et al., 1991). Further research is warranted.

The Importance of Real-Life Experiences in Relationships

An essential feature of the Bowlby–Ainsworth perspective is the role attributed to real-life experiences in attachment relationships. Much of our understanding about attachment development is built upon Bowlby's insight that, in addition to the well-demonstrated effects of trauma, attachment behavior and representations depend very much on the cumulative effect of ordinary variations in actual care and family interaction experiences (Bowlby, 1988).

Bowlby helped recognize the mother (as primary caregiver) as a key participant in children's psychological development. Because he was a practicing child psychiatrist who saw children in real families, facing separations, suffering losses, and interacting with parents who often experienced real problems of their own, Bowlby grasped the relations that exist between parenting difficulties and, both, their own experiences of being parented and children's outcomes (Bowlby, 1946, 1949; Bowlby, Robertson, & Rosenbluth, 1952; Robertson, 1952). Bowlby agreed with the idea that trauma matters and that a child's conceptualization and perspective are as important as objective events are. Yet, based on his experience with children and their families, he disagreed with the idea that most traumatic events are the product of intra-psychic conflict and of fantasy. Real-life experiences, he considered, are vital sources to understand developmental, personality, and relational difficulties and disorders as well as optimal development (Bowlby, 1988).

Bowlby concluded that experiences within relationships matter and assigned them central stage. He considered them important, if not the main source of fears and anxiety in individuals (Bowlby, 1973). Bowlby sustained that everyday experiences that are objectively not traumatic can create significant difficulties for children, if they threaten access to attachment figures on a regular basis. Those

experiences include significant but routine separations from parents, rejecting behavior from attachment figures, and threats or implications of abandonment (Bowlby, 1988). According to Bowlby, these experiences are surprisingly not at all uncommon.

Differences in the Quality of Child–Parent Attachment Relationships

All children form attachment relationships with their main caregivers, but not all relationships are equal. They differ in their quality. Ainsworth pioneered the study of individual variation in the quality of attachment relationships (Ainsworth, 1967; Ainsworth et al., 1978). Her influential longitudinal study in Baltimore provided empirical evidence about infants' differences in secure base behavior organization at home and in the lab.

Ainsworth's now well-known laboratory procedure, the "strange situation" for 12- to 18-month-olds, allowed her to discriminate three major groups. After careful examination of infants' behavior during the strange situation, but especially during the reunion episodes, Ainsworth described those groups of infants based on the configuration or patterning of behavior exhibited. She construed the differences among the groups in terms of security when using mother as a secure base. Two of these groups (avoidant and resistant/ambivalent) consisted of infants deemed to be in anxious/insecure attachment relationships with their mothers; the other group consisted of infants in secure relationships.

The relevance and validity of Ainsworth's classification system are determined by the relations reported between infants' organization of behavior both at home and in the strange situation (Ainsworth et al., 1978; Vaughn & Waters, 1990). The patterning of behavior, not individual instances of it, was found significantly related in both contexts. Discrete behaviors were not found to be associated in both contexts. For example, in the case of crying, while securely attached infants were found to cry the least at home, they may or may not have cried in the strange situation. On the other hand, anxiously attached babies who cried the least (avoidant) or a lot (resistant) in the strange situation cried the most at home during both the first and fourth quarter of their first year, and were not distinguishable from each other (Ainsworth et al., 1978). Thus, the meaning of infants' organization of behavior in the strange situation is given by its correspondence to *patterns* of interaction with mother observed at home.

The organization of secure infants' behavior in interactions with their mother indicates that they are able to use her as a secure base. If distressed during separation from mother in the strange situation, they seek proximity and contact with her during reunion, and contact is effective in promptly reducing stress. If not openly distressed by separation, the baby responds to mother with active greeting and interaction during reunion episodes. There is little or no tendency to avoid or to resist and be angry with mother upon reunion. As just mentioned, infants may or

may not be distressed during the separation episodes, but when they are, it is clear that they wants their mother, even though they may be somewhat consoled by the stranger. Although secure infants tend to be affiliative with the stranger in mother's presence, they are clearly more interested in contact and interaction with their mother than with the stranger (Ainsworth et. al., 1978).

The organization of anxious infants' behavior in interactions with their mother indicates that they are not able to use her skillfully and effectively as a secure base. Infants considered to be anxiously avoidant exhibit little affective sharing with mother and readily separate to explore toys. They treat the stranger much as they treat their mothers, and are affiliative with the stranger in mother's absence; they show little preference for mother. These infants show active avoidance of proximity to, contact, and interaction with mother in reunion episodes. If there is approach, the infant mixes its welcoming with avoidance. If the baby is picked up by mother, there is little or no tendency to cling or resist being put down. During separation episodes, the baby is typically not distressed; but if there is distress, it seems to be due to having been left alone for it tends to be alleviated when the stranger returns; there is little or no stranger avoidance (Ainsworth et. al., 1978).

Anxious-resistant infants exhibit poverty of exploration even in pre-separation episodes; they seem wary of novel situations and of the stranger. These infants are likely to be very distressed upon separation and are not easily calmed by the stranger. Upon reunion, babies in this group are not easily calmed by mother's return. They may show proximity seeking and contact mixed with resistance; alternatively, they may continue to cry and fuss, and show extreme passivity. Babies in this group show no or little tendency to ignore their mother during the reunion episodes (Ainsworth et. al., 1978).

Main and Solomon (1986, 1990) proposed a fourth classification group "D." Infants in this group often cannot maintain a clear and coherent strategy in the organization of their attachment behavior in the strange situation. Because of this, infants in this group are labeled "Disorganized/Disoriented" and are considered to be anxiously attached. This classification is assigned in addition to an alternate best-fitting category of A, B, or C. Infants classified into this group exhibit patterns of behavior that lack a readily observable goal, purpose, or explanation. The most characteristic theme in the list of behaviors is that of disorganization or an observed contradiction in movement pattern. A lack of orientation to the immediate environment is also characteristic of these children (for a detailed description of indices of disorganization and disorientation see Main & Solomon, 1990).

Quality of Care and Individual Differences in Security

In studying the development of child–mother attachment relationships, Ainsworth gathered detailed information about maternal behavior and its organization that led her to formulate the hypothesis that the quality of care is important when studying individual differences in infants' attachment security. Her exploratory strategy of

conducting open observations that captured a wide range of content was important for it provided her with information about those aspects of maternal behavior that are relevant to the development of attachment security and that were found to be related to the organization of secure base behavior at 12 months (Ainsworth et al., 1971; Ainsworth, Bell, & Stayton, 1974; Ainsworth et al., 1978).

Ainsworth scored maternal care variables from the transcripts created from her observations. One type of measurement strategy, and perhaps the most widely known, was based on the use of scales that tapped on general characteristics of maternal care: sensitivity to the infant's signals and communications, cooperation with baby's ongoing behavior, acceptance of the baby's needs, and physical and psychological accessibility. Importantly, such scales were constructed based upon the information gathered during home observations and not in advance, and referred to the organization of maternal behavior during interaction with their infants.

Ainsworth's identification of those aspects of a mother's behavioral organization as important dimensions of quality of care associated with differences in infants' security still provides a valuable framework for research on this issue. Her model of early care has served as the theoretical foundation for empirical studies investigating the factors that account for individual differences in infants' organization of secure base behavior. Numerous empirical studies have confirmed the quality of care-security link (de Wolff & van IJzendoorn, 1997; Pederson & Moran, 1995, 1996; Posada et al., 2004).

The Context of Maternal Care

Since the empirical evidence available to date indicates that a caregiver's quality of care plays an important role in security outcomes, an obvious inquiry is that concerned with the factors that influence the provision of care. One relevant set of influences is concerned with the concurrent living circumstances surrounding the child–mother dyad. The assumption underlying this research is that features of a dyad's ecology influence the quality of maternal care. Thus, for example, stressful circumstances, if a constant feature of the dyad's context, adversely impact a caregiver's sensitivity and this in turn affects the quality of infant–caregiver relationships.[1]

Indeed, research supporting this line of reasoning indicates that characteristics of the context are associated with children's attachment security. Accordingly, the marital climate has been found related to attachment security in expected ways. Results

[1]To account for individual differences when mothers interact with their children, attachment researchers have also turned their attention to caregivers' current conceptualizations of their own attachment relationships. Such conceptualizations have mainly been studied with the adult attachment interview (AAI). Overall, studies investigating the associations between mothers' AAI classifications and their infants' strange situation classifications have reported significant levels of correspondence, especially when the match is restricted to the secure-insecure distinction. Results for father-infant dyads are similar, although the levels of correspondence are not as high as those for mothers. These findings, however, do not address the issue of whether attachment representations indeed are related to individual differences in sensitive caregiving behavior; the relevant empirical literature on this issue using the AAI is more limited.

show that infant–mother secure attachments were more likely to occur in families in which husbands and wives were highly satisfied with their marriages, had higher marital adjustment, and experienced less marital conflict (Belsky, 1999; Glober-Tippelt & Huerkamp, 1998; Goldberg & Easterbrooks, 1984; Howes & Markman, 1989; Isabella & Belsky, 1985). Similarly, child–mother insecure attachments have been found to be associated with low marital adjustment, high marital conflict, and physical aggression against the mother (e.g., Glober-Tippelt & Huerkamp, 1998; Goldberg & Easterbrooks, 1984; Posada & Pratt, 2008). Attachment security has also been related in expected ways to stressors associated with low Socio-Economic Status (SES) conditions (e.g., de Wolff & van IJzendoorn, 1997; Diener, Nievar, & Wright, 2003; Posada et al., 1999). Other studies have demonstrated that changes in child security are associated with an increase or decrease of stressful events in family living conditions (Egeland & Farber, 1984; Vaughn, Egeland, Sroufe, & Waters, 1979; Vondra, Hommerding, & Shaw, 1999).

Yet, studies specifically addressing the associations between context characteristics and maternal caregiver's quality of care are few and sorely needed. In general, studies on the issue have been conducted with older children and results show that negative emotions from the couple's relationship have adverse effects on mother–child relationship, particularly in the domains of maternal emotional availability and sensitivity to her child's needs and signals (e.g., Cummings & Davies, 2002; Frosch, Mangelsdorf, & McHale, 2000; Pianta, Sroufe, & Egeland, 1989; Stevenson-Hinde & Shouldice, 1995).

The Relevance of Attachment Relationships for Development

Bowlby (1969/1982) suggested that attachment relationships are important because of their potential implications for development. In the context of those relationships, children explore and learn about the environment. Moreover, attachment relationships provide children with a context for socialization and for the development of expectations about close relationships in general. Lessons learned by participating in these relationships are hypothesized to play a significant role in how an individual organizes her or his relationships and how he or she parents his or her offspring. Early child–parent relationships are hypothesized to be the socialization crucible within which behaviors, interaction strategies, emotions, and beliefs and expectations about significant others are forged and honed (Ainsworth et al., 1974). These acquisitions constitute the suite of child social competencies available for use in social arenas outside the family.

It is argued that secure attachment relationships constitute an asset for parents (Ainsworth et al., 1974). Children participating in secure attachment relationships where they are confident in their attachment figure's availability and responsiveness are likely to be more receptive to their parents' socialization overtures. Conversely, relationships in which children are not confident in the availability and responsiveness of their attachment figure (anxious attachment) do not provide a favorable context for the acquisition of socialization outcomes that parents want their children

to achieve. Thus, individual differences in security are hypothesized to influence children's development. The empirical evidence available seems to provide support for that contention (Attachment Relationships and Social Competence), although the mechanisms implicated in the associations between security and socialization outcomes reported have not been clearly established (e.g., Thompson, 2008). If individual differences in attachment security are indeed a factor in children's socialization outcomes, then the inquiry about where those differences come from and the factors that play a role in creating them takes central stage.

Child–Mother Attachment Relationships in Military Families

If it is true that child–mother attachment relationships provide a key arena wherein children acquire and practice skills, interaction strategies, expectations, and representations about others, themselves, and relationships that importantly influence their development, it is essential to determine the potential impact that experiences faced by military families have on those relationships. In light of the discussion above and the notion that the issues addressed apply to any kind of family, and of the current circumstances faced by families with deployed military parents, we present information that allows us to deal with three key issues, namely, (1) the association between indices of quality of maternal care and child behavior indicative of security, (2) the relations between characteristics of the context surrounding the child–mother dyad and both quality of maternal care and child security, and (3) the associations between children's security and socialization outcomes as peer interactions are concerned.

Participants' Characteristics and How the Data Was Collected

Participants were 172 at-home mothers from military families whose husbands had been deployed at least once. The majority of them were married (90%) and had at least one child between 2 and 5 years of age who was the target child in this study. Their level of education ranged from incomplete high school to post-college education (8% incomplete high school, 42% high school graduate, 41% some college, 8% college graduate, and 1% post-college). Thirty-one percent were employed full time, 36% part time, and 33% were not employed. The average number of members in the family was 4.03, and household yearly income ranged from under $20,000–40,000 (4% under 20,000; 51% $20,000–30,000, and 45% $30,000–40,000). Family military status was: 76% active duty, 16% reserves, and 8% national guard.

Mothers provided the information on all the variables reported via telephone interviews. Data on maternal caregiving behavior during interactions with her child at home was obtained by using nine items selected from the Maternal Behavior Q-set for Preschoolers (Posada et al., 2007). These items are representative of

secure base support offered by a mother. They were scored using a five-point scale from "Strongly Disagree" (1) to "Strongly Agree" (5). Item scores were averaged and the resulting composite was used as an index of maternal sensitivity. Internal consistency, Cronbach's alpha, was 0.82.

Information about child behavior during interactions with mother at home was gathered by using ten items representative of secure base behavior and smooth interactions with mother from the Attachment Q-set (Waters, 1995). These items are representative of secure base use of mother on a child's part. As with maternal behavior, these items were scored by using a five-point scale from "Strongly Disagree" (1) to "Strongly Agree" (5). Item scores were averaged and the resulting composite was used as an index of child security. Internal consistency, Cronbach's alpha was 0.68.

Regarding characteristics of the context where child–mother dyads lived, mothers provided two kinds of data, chaos (i.e., confusion and disorganization) at home and social support received. Information on environmental chaos in the home was obtained with the CHAOS Scale (Matheny, Wachs, Ludwig, & Phillips, 1995). Fifteen items were included and mothers rated them using a five-point scale from "Strongly Disagree" (1) to "Strongly Agree" (5). A composite score was obtained by averaging the item ratings. Internal consistency, Cronbach's alpha, was 0.83. Information on social support was gathered with seven items from the Parenting Stress Index (Lloyd & Abidin, 1985). Mothers rated those items using a five-point scale from "Strongly Disagree" (1) to "Strongly Agree" (5). A composite score was obtained by averaging the item ratings. Internal consistency, Cronbach's alpha, was 0.78.

Finally, as children's social competence is concerned, information was obtained by using the Social Competence and Behavioral Evaluation scale (LaFreniere & Dumas, 1996). This scale yields scores on three subscales, social competence, aggression, and withdrawal. Five out ten items were selected for each of three subscales and mothers rated them by using a six-point scale from "Never" (1) to "Always (6). Three composite scores were derived, social competence, aggression, and withdrawal, by averaging the ratings given to the corresponding items. Internal consistency, Cronbach's alpha, for each of the scales was 0.70, 0.73, and 0.78, respectively.

Quality of Maternal Care and Child Secure Base Behavior

Our first question examined the association between behaviors indicative of maternal sensitivity and children's scores on behavioral indices of attachment security. We found a robust correlation ($r=0.54$, $p<0.01$) indicating that when mothers respond appropriately to their children's signals and support them in their explorations, children, in turn, use them as a secure base and are confident in their mother's availability and responsiveness. This significant association between indices of

maternal quality of care and behavioral indices of attachment security is in line with the existing empirical literature for non-military families. A meta-analysis of 65 studies conducted by de Wolff and van IJzendoorn (1997) reported a significant correlation between the two constructs ($r = 0.24$) for studies that have investigated the relation between sensitivity and infant security when assessing the constructs in conceptually similar ways to Ainsworth's. Studies that employ observational methodologies more akin to the one employed by Ainsworth typically report higher association indices (correlation coefficients between .40 and .60; see Pederson & Moran, 1995, 1996; Posada et al., 1999, 2002, 2004, 2007).

The fact that mothers in this study provided information about both maternal and child behavior, however, is likely to have influenced the size of the association found. Importantly, we should keep in mind that this empirical effort was an exploratory step and results definitely justify a greater investment of time, effort, and money in conducting research in military families with methodologies that allow for an independent assessment of each construct. Also, we need to be mindful of the difficulty in accessing these samples and thus of the need to work with what we have available. Ideally, observations by trained research assistants in naturalistic settings (e.g., home and playgrounds) should be conducted to capture both caregiving and secure base behavior in vivo. Yet, access to samples of interest in the contexts of interest is not always possible.

Characteristics of the Context Surrounding Mother-Child Dyads and Quality of Their Interactions

We examined information about maternal perceptions about the level of confusion and disorganization in the home environment, as we were interested in checking the links between a child–mother's ecology and both mothers' ability to provide children with sensitive care and children's skillful secure base use of mother. Analyses revealed significant and negative associations between indices of sensitivity and security, and mothers' reports of chaos at home. The more confusion and disorganization in the home, the less mothers reported being able to be sensitive with their preschoolers ($r = –0.46$, $p < 0.01$) and the less preschoolers exhibited indices of security as per maternal reports ($r = –0.48$, $p < 0.01$). Similarly, we were interested in whether maternal perceptions of social support were associated with mothers' ability to provide sensitive care and children's secure base use. Findings indicated that higher scores in social support were significantly related to higher scores in both maternal sensitive responding ($r = 0.47$, $p < 0.01$) and children's skillful use of mother as a secure base ($r = 0.36$, $p < 0.01$).

This set of results are in line with previous research indicating that stressful living circumstances are not conducive to smoothly functioning child–mother relationships (e.g., Egeland & Farber, 1984; Evans & Lepore, 1992; Posada et al., 1999; Vaughn et al., 1979). Mothers' ability to provide secure base support to their children, to heed their signals, and tend their needs is compromised by taxing living circumstances.

Similarly, confusing and disorganized environments do not facilitate preschoolers' use of their mothers as a secure base, that is, as someone with whom to explore and learn about their surroundings and to whom to go back if needed or wanted. In the same vein, mothers who perceived higher levels of social support also rated themselves more positively in their ability to be sensitive with their children, and rated their children as more skillful in using them as a secure base.

This information is useful as it points to the importance of the ecology of military families when considering parent-child relationships and family dynamics. We certainly need more data and further research to examine how relevant contextual factors and processes such as stress, fathers' or other relatives' involvement in child rearing, marital relationships, and spousal conflict and resolution strategies, among others, might differentially impact different facets of sensitive caregiving and child's emotional security.

Attachment Relationships and Social Competence

Prior research addressing this issue for preschool age children is sparse. Yet, if Ainsworth's thinking is on target, having a securely attached child would be a distinct advantage for parents. Research with infants (e.g., Pastor, 1981; Sroufe, 1983) suggests that early infant–mother attachment relationships are related to how children work their way into and maintain their status in the peer group later on (e.g., Bost, Vaughn, Washington, Ceilinski, & Bradbard, 1998). Our own data reflect the benefits that appear to accrue to securely attached preschoolers as they operate in peer settings. Higher scores on indices of child security were significantly related in expected directions to social competence ($r=0.39$, $p<0.01$), aggression ($r=-0.36$, $p<0.01$), and withdrawal ($r=-0.22$, $p<0.01$). Again, we need to keep in mind that our results are likely to be influenced by the fact that all the information was obtained from the same source. On the other hand, they are in line with research indicating that infants participating in secure attachment relationships are advantaged in peer groups generally, and in the formation of friendships during childhood and beyond (e.g., Collins & Sroufe, 1999; Englund, Levy, Hyson, & Sroufe, 2000; Kerns, 1996; Kerns, Cole, & Andrews, 1998; LaFreniere & Sroufe, 1985; Sroufe, Egeland, & Carlson, 1999; Weinfeld, Ogawa, & Sroufe, 1997). Also, the findings presented are aligned with research that indicates that secure child–parent attachment relationships are related in expected ways to conflict management with peers (Park & Waters, 1989), the development of early conscience (Kochanska, Aksan, Knaack, & Rhines, 2004), and behavioral difficulties (e.g., Cohn, 1990; Turner, 1991).

Furthermore, the information gathered on maternal sensitivity also was significantly associated in expected ways with children's social competence ($r=0.53$, $p<0.01$), aggression ($r=-0.34$, $p<0.01$), and withdrawal ($r=-0.33$, $p<0.01$). These latter findings are important because they may suggest that parenting behavior is a potential mechanism by which children's security (or insecurity), is associated

with children's behavior in interaction with peers. It is very likely that by participating in secure attachment relationships children learn ways of appropriately interacting with others. These lessons are likely then to be implemented and practiced in interactions with peers. In addition to this implicit learning taking place by participating in attachment relationships, it is likely that sensitive parents explicitly support their children in navigating their exchanges with peers, by assisting them in how to share, handle conflict and differences, behave with friends, etc. If that is the case, parental behavior may be one potential factor accounting for the reported associations between attachment security and child behavior during interactions with peers. This avenue of inquiry has barely begun to be explored. The findings presented here justify the expenditure of greater research efforts in testing it.

Conclusion

Attachment theory and research can be useful in framing the impact of conditions surrounding the development of children in military families, particularly during times of war and international armed conflict. The Bowlby–Ainsworth perspective seems relevant and useful to explore the development of child–parent relationships in the context of the particular ecology of military families. Stressful circumstances associated with deployments, separations from parents, and changes in household structure and roles are all experiences likely to influence children and mothers immersed in these experiences. Further, children's outcomes may vary depending on the quality child-mother relationships and the kinds of support available to families. The preliminary findings presented here indicate that the quality of maternal care decreases as the perceived stress increases. Similarly, as perceived social support increases, quality of maternal care increases. Further, quality of maternal care was associated with children's security, and both quality of care and security were, in turn, associated with children's social competence with peers. These results warrant the investment of resources to conduct more research on the issues explored here with more incisive methodologies; also, they beg the question about the role of the child–father relationship. Attachment relationships as a context for development have been extensively documented. Their potential to both positively and negatively impact children's socialization outcomes should demand our attention and direct our efforts to study and understand the diverse factors influencing them, so that we can use that knowledge to support the construction of smoothly working child–parent relationships.

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Chapter 8
Wartime Deployment and Military Children: Applying Prevention Science to Enhance Family Resilience

Patricia Lester, Gregory Leskin, Kirsten Woodward, William Saltzman, William Nash, Catherine Mogil, Blair Paley, and William Beardslee

Abstract During wartime, military families and children make extraordinary sacrifices for their country. This chapter reviews the impact of wartime deployments and parental combat-related mental health problems on military children, as well as risk and protective factors that may serve to guide preventive interventions for military families facing multiple deployments, combat operational stress, and psychological injuries. Using a public health prevention approach, we describe the adaptation of evidence-based interventions to support psychological health in military families. This adaptation is FOCUS (Families OverComing Under Stress), a family-centered preventive intervention designed to enhance the strengths of family members, manage deployment-related stressors and reminders, and maintain positive family growth and psychological adjustment throughout the stages of deployment. Supported by the U.S. Bureau of Navy Medicine and Surgery (BUMED), military leadership, community providers, and families, this intervention has been implemented through a large-scale service demonstration project to support military families.

Introduction

The U.S. military has over 3.5 million personnel in its active and reserve components. Over half of today's active component military members are married, and over one-third (38%) are married with children. There are more family members than service members across the active component branches, with children making up over 60% of the military family member population (Office of the Deputy Under Secretary of Defense, 2007). Since 2001, over 1.5 million active and reserve component forces have deployed to a combat mission as part of Operation Iraqi Freedom (OIF) or

P. Lester (✉)
Semel Institute for Neuroscience and Human Behavior,
University of California at Los Angeles, Los Angeles, CA, USA
e-mail: plester@mednet.ucla.edu

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Operation Enduring Freedom (OEF). Many of these active and reserve component service members have served repeated and extended combat tours to war zones in Iraq and Afghanistan. This increased demand on military personnel to serve in dangerous, overseas combat duties has led to greater demands on service member families and their children. A parent's military deployment, as well as the service member parent's return and reintegration into the family system, represents a significant adaptation challenge for co-parenting couples and their children.

In this chapter, we describe the major background factors to conceptualize the development of preventive interventions for military children at risk due to multiple deployment stress, as well as parental psychological and physical injury. As a foundation, we examine the context of wartime military service and unique challenges faced by service members, their families, and children, as well as the impact of these stressors on the psychological health of the family. Next, we describe a theoretical framework for applying prevention science and resiliency research to address the psychological concerns of military families from a public health perspective.

As military families are called upon to serve, protect and make sacrifices for the United States, a national response is indicated to support the well-being and positive development of these families and children. As an example of this, we describe the adaptation of a family-centered preventive intervention for military children and families facing wartime deployments. Based on our collaborative team's evidence-based, family-centered preventive interventions, the FOCUS (Families OverComing Under Stress) intervention has been adapted and implemented for military families. FOCUS is a family-centered, selective preventive intervention designed to enhance the strengths of each family member, manage stressors and traumatic reminders, and maintain the family's positive growth and psychological development throughout the multiple stages of military deployment (Saltzman, Lester, Pynoos, & Beardslee, 2007; Saltzman et al., 2009). During high operational tempo, families negotiating reintegration challenges are frequently also preparing for a subsequent deployment. FOCUS provides the military family with the opportunity to develop a family narrative that locates their unique experience and phase of deployment, assisting with both reintegration challenges, and preparing them for future deployments. We describe the staged adaptation and core components of the FOCUS model for military families through sustained support from military medicine (BUMED) and local military installation communities to demonstrate successful program implementation. Key features of the collaborative efforts between a university family prevention team and military partners are described, including programmatic implementation across a continuum of family care.

Background Factors

Several characteristics of deployment and of family composition are important contextual factors in understanding military children's and families experiences. These factors include the high operational tempo of deployment and combat stressors

faced by today's military forces (American Psychological Association [APA], 2007; Kang & Hyams, 2005). In addition to combat and deployment are the everyday lifestyle demands placed on military family members and their children. These demands, and the military's provision of supportive programs to families, play a crucial role in service member satisfaction and reenlistment decisions (Segal, 1986). Next, recent demographic trends suggest that there is a large population of children who have one or both parents in the military. These trends would also indicate that over the last 20 years, there are a growing number of women, single parents, and dual-career parents in the military. Finally, several recent studies have found that parental deployment may play a significant role in the psychological health of the non-deployed parent and children (McFarlane, 2009). Each of these factors is explored in greater detail below.

Signature Challenges Related to Current Military Deployment

Beginning with the terrorist attacks against the United States on September 11, 2001, followed by major combat operations in Iraq and Afghanistan, high personnel demands have been placed on the military to protect and defend the national and international security environment. In order to achieve and sustain these goals, the military has required frequent and prolonged deployment cycles for service members and support personnel (Hosek, Kavanagh, & Miller, 2006). At times, service members have spent 12 months or more in a combat zone, with only 6 months at home prior to serving another deployment. Many OIF and OEF service members have deployed repeatedly to a combat zone (Kang & Hyams, 2005). According to the APA Presidential Task Force on Military Deployment Services for Youth, Families and Service Members (APA, 2007), more than 1.5 million service members had been deployed to the war zone, with 500,000 serving in two tours of duty, 70,000 in three tours, and 20,000 in more than five tours of duty.

In addition to the strains created by the high operational tempo, service members are exposed to daily stressors and potentially life-threatening and traumatic events, including ongoing threats of violence from enemy and hostile forces, exposure to death and/or injury of American or allied forces, exposure to death and injury of civilians, and exposure and threats from improvised explosive devices (IEDs) as well as other types of urban warfare (Friedman, 2006). Additionally, service members serve in some of the most difficult and harsh types of desert environments, where the conditions (i.e., extreme heat, sandstorms) may further confer physical and emotional stress. Repeated deployment and exposure to these types of traumatic stressors and difficult conditions have been shown to be related to high rates of combat-related post-traumatic stress disorder (PTSD) (Baker et al., 2009; Reger, Gahm, Rizzo, Swanson, & Duma, 2009; Seal et al., 2009), traumatic brain injury (TBI; Lew et al., 2006; Okie, 2005), substance abuse (Erbes, Westermeyer, Engdahl, & Johnsen, 2007), and major depression (Hoge et al., 2004) in returning service members and veterans.

Family Demographics in the Military

According to the 2007 Department of Defense demographic report (Office of the Deputy Under Secretary of Defense, 2007), the lowest marriage rates across service branches are among the entry-level enlisted, with marriage rates for active component enlisted (E-1–E-3) reported at 26.5% for the Marine Corp and 35.4% for the Army. Marriage rates climb according to pay grade and rank, with the highest military echelons demonstrating the highest marriage rates. Military officers at the highest ranks (O7–O10) across service branches are nearly universally married, with rates as high as 97.8% for the Army. In 2007, the overall rates of marriage among service members was (from lowest to highest) 45.1% for Marine Corps, 55.1% for Navy, 55.5% for Army, and 60.6% for Air Force. The marriage rate among active component females is 46.2%, while the rate for active component males is 56.7%. In today's military, there are more family members (57.7%; counted as spouses, children, and adult dependents) than active component service members (42.3%; counted as married and single service members). Over half (57%) of active component members have family responsibilities (described as having a spouse and at least one child). The rates of military members with family responsibilities are higher among officers than enlisted personnel across all service branches. For example, 71.7% of Army officers have family responsibilities, compared to 58.3% of Army enlisted; similarly, 70.4% of Navy officers have family responsibilities, compared to 54.1% of enlisted. Given these demographics, there has been an increasing emphasis on military family member functioning and psychological health, as well as on the role of family adjustment on service member functioning and readiness for duty.

Military Lifestyle Demands

To accomplish its mission, the military makes significant demands on its service members and their families. In her seminal work on the subject, sociologist Mady Segal suggests that these demands can potentially lead to negative outcomes for family members. These include (1) geographic mobility, (2) residence in foreign countries, (3) separations from the family, and (4) risks of service member injury and death (Segal, 1986). Burrell, Adams, Durand, and Castro (2006) augmented Segal's original four major demands on families by adding (5) long and unpredictable duty hours, (6) pressures for military families to conform to accepted standards of behavior, and (7) the masculine nature of the military. It is, in fact, these demands that make military service a unique occupational experience for the service member, which extends to the day-to-day experiences of the family.

While it exerts some specific normative pressures directly on family members, most pressures affecting families are exerted indirectly through claims made on the service members. Bourg and Segal (1999) describe the value to the military of

recognizing the legitimacy of the family demands on the service member's time, loyalty, and personal resources. Through systems that address both the needs of the military and family institutions, the military can create "sustained high commitments" from both service members and spouses. Organizational support (contributing to a decrease in the conflicts between the military and family) for families is thus proposed as a means to directly enhance the affective commitment of service members and spouses to the military.

Impact of Military Deployment on Children and Families: Research to Guide Intervention Development

There are almost two million military children with an active or reserve component military parent, many of whom have experienced one or more parental combat-related deployments since the onset of OIF and OEF (Military Child Education Coalition, 2007). For children and spouses, a service member parent's deployment to combat theater may generate significant worry in the family members. Across the family system, return and reintegration demands following long separations and combat exposure may be quite challenging for the reestablishment of family roles and routines. During deployments, there may be disruptions in social support and financial systems and increased emotional distress in the caretaking parent and children. Following deployments, families may experience the impact of combat-related mental health problems and physical injuries in the deployed parent once he/she returns home.

Research on the family stress burden of multiple deployments on military children is limited. McFarlane (2009) provides a recent review of the available studies on the impact of parental deployment on children and spouses. Some studies suggest that although military children and families adapt well to routine deployments, the stress of multiple and prolonged deployments, particularly during wartime, may take a toll on some children and families (Lincoln, Swift, & Shorteno-Fraser, 2008; Palmer, 2008; Waldrep, Cozza, & Chun, 2004). Research has indicated that during deployments, children and adolescents may show increased sadness or tearfulness, increased anxiety, higher stress levels, increased behavioral problems, feelings of uncertainty and loss, as well as academic problems (Chandra, Burns, Tanielian, Jaycox, & Scott, 2008; Flake, Davis, Johnson, & Middleton, 2009; Huebner, Mancini, Wilcox, Grass, & Grass, 2007; Rosen, Teitelbaum, & Westhuis, 1993).

Developmental and gender differences have also been documented for children's responses to deployment stress. Infants and toddlers may be particularly sensitive to any distress experienced by their parents or other caregivers (Murray, 2002). Preschool-aged children may regress, exhibiting behaviors they had previously outgrown. In a recent study, Chartrand, Frank, White, and Shope (2008) found that children aged 3–5 years with a deployed parent exhibited higher levels of both internalizing and externalizing behavior than same-aged counterparts whose parents

were not deployed. While detailed observational or longitudinal studies on the impact of parental separation during wartime on children during infancy and early childhood are limited, concerns exist about the impact of separation from a primary caregiver. Of special note is the way that developmental tasks may be undermined by the prolonged or repeated absence of a primary caregiver. This is also true for school-aged children and adolescents who require a "secure base" to progressively venture into the world and develop more autonomous skills and relationships (Bowlby, 1988). In interviews with teens whose service member parent may have been away accumulatively for 2–3 years out of five, the teens report a long list of missed personal milestones and daily opportunities for engagement, and that even after a parent has been home for some time, he or she may be seen as an outsider (American Academy of Pediatrics, 2009). In addition, gender differences have been found, with one study indicating boys may be more impacted than girls (Jensen, Martin, & Watanabe, 1996).

School-aged children may exhibit problems with attention, emotional dysregulation, and academic difficulties (Lincoln et al., 2008). A recent study with Army and Marine Corps families found increased levels of anxiety symptoms in school-aged children whose parents had experienced combat-related deployments. Moreover, duration of combat-related deployment over the course of a child's life was related to child depressive symptoms and externalizing behaviors, and psychological distress among both service member and non-service member parents was associated with child symptoms (Lester et al., 2010). Adolescents with deployed parents may exhibit anger or aloofness (Lincoln et al., 2008). Furthermore, parents affected by wartime deployments may be at higher risk for child maltreatment or neglect, particularly younger parents with young children (Gibbs, Martin, Kupper, & Johnson, 2007; Rentz et al., 2007). There have also been findings of increased marital conflict and domestic violence in families with a deployed parent (McCarroll, Fan, Newby, & Ursano, 2008).

With rates of combat-related mental health problems indexed at 18% among those returning from deployment to Iraq (Hoge et al., 2004), many children and families may be considered in the "line of fire" of indirect effects of parental psychological symptoms. Numerous studies have described the impact of PTSD on veterans' families, including increased marital distress and domestic violence, "secondary traumatization" of spouses and children, and interference with parenting (Galovski & Lyons, 2004). Other reviews have discussed the intergenerational transmission of trauma in children of veterans (e.g., Dekel & Goldblatt, 2008; Pearrow & Cosgrove, 2009).

When combat exposure is compounded by a military parent's post-combat mental health problems, the children and spouses are likely to be affected as well. Even without the stress of wartime deployment, parental mental or physical illness has been shown to constitute an important risk for poor adjustment in children (Beardslee, 1984; Lester, Stein, & Bursch, 2003; Rutter, 1966; Rutter & Quinton, 1984). Longitudinal evaluation of parental mental health problems for the child have shown that the psychosocial disturbance within the family, especially the child's exposure to parental irritability, aggression, and hostility, are predictive of

child adjustment problems (Rutter & Quinton, 1984). Researchers suggest that the impact of post-traumatic stress on parenting and families may be best understood by considering how primary symptom clusters are manifested in family relationships (Carroll, Rueger, Foy, & Donahoe, 1985; Westerink & Giarratano, 1999). For example, when a traumatized parent returns home with numbed or blunted emotions, and with a reduced ability to express, engage, or disclose to loved ones, he/she is at much higher risk for marital distress and breakdowns in parent-child relations (Riggs, Byrne, Weathers, & Litz, 1998; Ruscio, Weathers, King, & King, 2002). Riggs et al. (1998) found that, among male Vietnam veterans with PTSD, 70% of these veterans reported clinically significant levels of distress in their family relationships. According to Riggs and colleagues, intimacy difficulties were significantly correlated with PTSD avoidance and numbing symptoms. As service members encounter trauma reminders in daily circumstances that may trigger abrupt changes in their mood and behavior, children and spouses may become confused or even frightened. The tendency of returning service members to be hypervigilant and highly reactive to threat may translate into irritability, a rigid or authoritarian parenting style, and an inability to tolerate normal household interactions, such as children arguing or engaging in physical play (Matsakis, 1988).

Clearly, the effects of post-traumatic stress experienced by a parent can reverberate throughout an entire family. Indeed, following traumatic exposure, a correlation between parent and child psychological symptoms, including traumatic stress, has been found consistently across many contexts and may persist over time (Dybdahl, 2001; Laor, Wolmer, & Cohen, 2001). This constellation of reactions to combat stress and deployment reminders can undermine parental attentiveness and availability, and may result in the service member excluding him/herself from family interactions and daily routines. Families of service members with post-traumatic stress tend to be less cohesive, adaptive, and supportive (Davidson & Mellor, 2001; Riggs et al., 1998; Westerink & Giarratano, 1999). These characteristics are linked with lower levels of family and child resilience, just as family closeness, effective support, and communication are linked with enhanced levels of child and family resilience (Walsh, 2007).

Framework for Interventions with Military Families and Children

As the above studies suggest, military families and children may be at increased risk for psychological health issues as a result of parental military deployment, parental and/or caregiver distress, frequent separations from the parent, and geographic relocation. It should be noted that the wide majority of military families and children function well despite these challenges. Through the identification of both risk and protective factors in military families facing wartime deployments, it is possible to better tailor preventive interventions to mitigate specific risk and promote protective factors in families (Luthar, 2006; National Research Council and Institute

of Medicine, 2009). The objective of prevention programs has long been the reduction of disease or disorder prior to their onset, in individuals who may be at greatest risk. More recent prevention efforts have emphasized prevention approaches with psychological competence or resiliency as the primary outcome. Many effective preventive interventions using strength-based approaches have been developed for children and families facing challenges such as parental divorce, parental medical illness, parental depression, and parental bereavement (National Research Council, 2009). Using this framework, multiple preventive interventions have demonstrated that family-centered approaches promote child positive adjustment, including successful achievement of developmental milestones, in the context of decreased parental functioning due to psychological or physical illness and other family adversities (Luthar, 2006; National Research Council, 2009). Examples of such protective factors that are targeted by family-centered interventions are social support from family members, secure parent-child attachment relationships, and positive parenting practices (Spoth, Kavanagh, & Dishion, 2002; Sroufe, 2005).

A Selective Preventive Intervention for Military Families and Children Facing Combat Operational Stress: The FOCUS Intervention

The developments in family-centered prevention science over the past two decades have provided a window of opportunity for a family-centered prevention for military families and children to be adapted and implemented to address the increased demands on military families during wartime. Below we describe the development of the FOCUS intervention as an adaptation of established evidence-based research (Saltzman et al., 2007). We describe a process of careful adaptation based on detailed integration of research on risk and protective factors for children and families facing deployment stress, identification of core components from evidence-based interventions, and adaptation of implementation strategies for military culture and context.

In addition, we describe the successful implementation of FOCUS for military families through a partnership between a university-based family-centered prevention team and military medicine as a model for integrating prevention services that supports family resiliency, destigmatizing psychological difficulties, and reducing barriers to appropriate care. Critical aspects of the methodological approach to program implementation are reviewed, including the process of iterative adaptation within and for a military community, and for the unique cultures of individual installations.

The FOCUS intervention has been developed from a foundation of evidence-based interventions that reduce risk and support resiliency across the family system, and builds upon a family-centered prevention approach for families affected by challenging circumstances. Over the past two decades, the field of family intervention science has demonstrated that family factors play an important role in child adjustment, and that effective caregiver-child relationships serve as scaffolds for

building adaptive skills such as emotional and behavioral regulation. Family-centered interventions that provide developmental guidance and increase adaptive skills in family members – particularly those that support parent-child communication, relationships, and effective family management – may reduce emotional distress and behavioral problems in children and support positive development over time (Spoth et al., 2002).

Given the ongoing demands placed on families experiencing multiple deployments, building and maintaining parental and child resilience is a critical concern. Longitudinal and intervention research with families in other settings suggests that parents' ability to effectively address the stressors such as wartime deployments and subsequent combat-related emotional distress and traumatic stress reminders will be influenced by their coping skills (Beardslee, Gladstone, Wright, & Cooper, 2003; Rotheram-Borus et al., 2003). Effective coping skills significantly enhance adjustment and positively affect the manner in which stress is managed by children and families (Compas, Phares, & Ledoux, 1989; Patterson & McCubbin, 1987). Interventions combining psychoeducation and coping skills have been successfully utilized to help families coping with chronic stressors and to increase a family's capacity to manage significant transitions and enhance problem solving strategies (Gonzalez, Reiss, & Steinglass, 1987; Rotheram-Borus, Lee, Lin, & Lester, 2004).

As a resiliency training intervention, FOCUS has been implemented at selected military installations for military families who have at least one child age five or older. Because a family-centered approach is used, younger (less than age five) children's needs are addressed as well through parental psychoeducation, developmental guidance, and FOCUS skill building as described below. Initial FOCUS child sessions and activities, however, have been designed for the developmental skills of school age children, tweens, and adolescents. Sessions and activities for preschool aged children have been adapted for implementation.

The principles of FOCUS are largely founded on the concept of psychological resiliency (for review, see Luthar, 2006). The concept of psychological resiliency is considered a process of active engagement in and maintenance of adaptive behaviors, as well as achieving positive developmental milestones in the face of stressful or traumatic life events. The FOCUS model is based on both learning and practicing skills that support and maintain family resiliency (e.g., emotional regulation, communication, goal setting, problem solving) in order to enhance family cohesion and social support.

Development of shared meaning in the context of stress or adversity has been linked to family resiliency (for review, see Walsh, 2006). FOCUS skills are developed and practiced in the context of a family narrative that is constructed as a graphic timeline. This narrative provides family member with the opportunity to address estrangements that may have emerged through the deployment, and establish a shared sense of meaning in response to deployment and other significant experiences (such as injury, training separations, etc.). Family members benefit from the shared learning, enhanced communication, and development of skills to contend with stressful events, as well as enjoy the positive supportive elements of a cohesive family environment.

Several fields of developmental, family, and intervention research illuminate the relevance of a family-centered approach to supporting child and family resiliency during stress. The foundational and theoretical underpinnings of this research have informed the development and application of FOCUS for military families and are described below. First, FOCUS is informed by the basic tenets of the family systems perspective including: (1) the family as a whole is greater than the sum of its parts; (2) individual family members have an ongoing and mutual impact on one another; and (3) individual members must always be understood in the context of the larger family system (Cox & Paley, 1997). As parents and children experience challenges common to military families, and as any one family member is affected by certain stressors, it is likely that other family members will also be affected. For example, if one parent has recently returned from deployment and is dealing with combat operational stress, the other parent and the children will likely be impacted by the difficulties the deployed parent is experiencing (note that this point is highlighted in the combat operational stress continuum model). Similarly, what is occurring in one relationship in the family will impact or "spill over" (Erel & Burman, 1995) into other relationships in the family. Thus, if the marital relationship is strained during or following deployment, parent-child relationships are likely to be adversely affected. FOCUS addresses the ongoing and mutual influences that family members have on one another and aims to work with as many family members as possible. By enhancing the skills of multiple family members, the family as a unit is best prepared to successfully manage the ongoing challenges of military life. A family systems perspective also highlights the notion that families typically maintain a certain equilibrium or "homeostasis." That is, most families are typically governed or organized by certain rules or patterns of interaction (e.g., mom and dad may each be responsible for certain parenting duties). This equilibrium can be challenged by both normal developmental transitions (e.g., birth of another child, child starting school) and more non-normative events (e.g., parent leaves for or returns from deployment, parent injured in combat). Families must adapt to and reorganize around these transitions and events. Military families have been described as "accordion" families (Minuchin & Fishman, 1981) in that they must frequently adjust to the departure and return of one (and sometimes two) family members – retracting and expanding to accommodate the presence and absence of a deployed parent.

When a parent is deployed, the family typically needs to reorganize and find a new equilibrium. For example, the oldest child often takes on some of the responsibilities of the deployed parent, and the non-deployed parent assumes both parenting roles. When the deployed parent returns, the family must reorganize again – an older child may have to relinquish new-found independence, and the returning parent and non-deployed parent will have to resume the daily coordination of parenting tasks. Some families will be able to reorganize and adapt to these events relatively smoothly, whereas others may have a harder time responding when the family's typical way of functioning is disrupted. For families experiencing other ongoing tensions or strain, the need to constantly respond to change can further jeopardize long-term well-being. Thus, a major goal of FOCUS is to assist families in developing

the coping skills that will allow them to handle these periods of reorganization more adaptively so that each family can function at its peak, both as a family unit and as individual members.

Co-parenting refers to the ways in which parents either support or undermine one another's parenting; how disagreements about childrearing are negotiated; how parenting duties and tasks are divided or shared; and patterns of parental interactions in the family (Feinberg, 2002). A large body of research suggests that the quality of the co-parenting relationship has important implications for both child and family well-being over time. For example, problems in the co-parenting relationship have been linked with behavior problems, attachment insecurity, and emotional dysregulation in children, as well as decreased maternal warmth, less father involvement, and less positive parent-child interactions (Bonds & Gondoli, 2007; Feinberg, 2002; Feinberg & Kan, 2008; Schoppe-Sullivan, Weldon, Claire, Davis, & Buckley, 2009).

Multiple and/or prolonged deployments can challenge the co-parenting relationship in significant ways. Parents may find it challenging to renegotiate their roles upon reunion and reestablish themselves as a team, as well as prepare for an upcoming deployment. FOCUS assists parents in strengthening and improving the quality of their co-parenting relationship. Teaching parents emotional regulation, goal-setting, communication, problem-solving, and management of combat stress and deployment reminders can equip them to deal more effectively with parenting disagreements. The co-parenting relationship may also be strained if the deployed parent has difficulty readjusting from being in a military environment (perhaps expecting the other parent to just "follow orders"), or if he/she is dealing with combat-related stress. Allowing parents to share their individual experiences and perceptions around deployment may help them to develop a better understanding of each other's difficulties readjusting to parenting roles. Additionally, parental conflict may have significant impact on child adjustment. There is a wealth of literature suggesting that negative emotions or interactions in a couple's relationship "spill over" (Erel & Burman, 1995) into the rest of the family and can disrupt the parent-child relationship (Cox, Paley, Harter, & Karnos, 2001). Parents who are distressed by conflicts with their spouse may be less emotionally available or attuned to their children, may withdraw from their children, may attempt to enlist one or more of their children as an ally in the conflict, or may engage in overly harsh, overly lax, or inconsistent disciplinary practices with their children. Children may perceive ongoing conflict between their parents as a threat to their emotional (and sometimes) physical safety and to the stability and integrity of their family life. The skills emphasized in FOCUS training can all serve to enhance the quality of the co-parenting relationship, and support parents or caretakers as a "leadership team" whenever possible. While not designed to provide marital counseling, FOCUS training can assist families in preventing further marital strain by increasing family cohesion, enhancing problem solving, and repairing breakdowns in communication.

Third, the family-centered approach used in FOCUS is informed by attachment research. An attachment perspective can be useful in understanding children's responses to separations from a parent during deployment. When a primary attachment

figure leaves, some of a child's usual resources for dealing with stressful circumstances or emotionally distressing events are no longer available. Children may rely on the non-deployed parent for more comfort and reassurance than normal during the deployed parent's absence. However, the non-deployed parent's own coping abilities and resources may be taxed during deployment, as he/she manages extra household responsibilities or assumes the responsibilities of both parents, all while dealing with his/her own concerns about the deployed parent. The impact of deployment on family members may be moderated by how well they are able to stay connected with the deployed parent during his/her absence. Particularly for young children, who tend to be concrete, the ability to see or talk to their parent or to have tangible reminders of their deployed parent may be very important in helping them to manage their emotional concerns. Attachment theory (Bowlby, 1969, 1973, 1980) has described the parent-child relationship as the foundation of the child's sense of security, with children learning through their earliest caretaking experiences that they can look to the parent for comfort, protection, or soothing when distressed, frightened, or feeling threatened. The parent's ability to act as an external source of emotional regulation for the child early in life is described as a primary predictor of security of attachment. Through interactions with important caregivers, children develop the capacity for self-regulation. Moreover, children's confidence that their caregivers will provide emotional support enhances their ability to explore new environments and develop social competency. Indeed, a wealth of research suggests that children with more secure attachment relationships have more positive relationships with teachers and peers, fare better academically, and are better able to handle stressful situations (Ahnert, Gunnar, Lamb, & Barthel, 2004; Belsky & Fearon, 2002; Nachmias, Gunnar, Mangelsdorf, Parritz, & Buss, 1996; O'Connor & McCartney, 2007; Sroufe, 2005). Although attachment concerns can be quite evident among younger children, they should not be presumed to be absent among older children and adolescents. Attachment concerns may be articulated less explicitly by older children and instead manifested in the form of behavior problems or somatic complaints. FOCUS training assists parents and children alike by normalizing attachment concerns for older children, as well as for parents with younger children.

Research Foundations of the FOCUS Intervention

FOCUS is grounded in three well-established interventions that have demonstrated a positive impact on child psychological adjustment and family functioning, through rigorous randomized controlled trials, in families and children facing challenging circumstances, including parental depression, parental medical illness and loss, and wartime exposure.

The first source program for FOCUS is a preventive intervention designed to strengthen children and families in which a parent is depressed (Beardslee et al., 2003; Beardslee, Wright, Gladstone, & Forbes, 2008). This intervention has been adapted for

use with single parents, inner-city moms (Podorefsky, McDonald-Dowdell, & Beardslee, 2001), and Latino families (D'Angelo et al., 2009). It has also been adapted for use in Head Start and Early Head Start to help teachers deal with depressed parents (Beardslee, Avery, Ayoub, & Watts, 2009). The approaches have been used in a number of countrywide programs for children of the mentally ill, including Holland and Finland (Solantaus, Toikka, Alasuutari, Beardslee, & Paavonen, 2009). For children affected by parental depression in the context of a preventive intervention program, both risk and protective factors for adjustment difficulties in children were identified and used as the foundation for a family-based intervention (Beardslee, 1984; Beardslee & Podorefsky, 1988; Beardslee & Wheelock, 1994; Beardslee et al., 2003). In particular, the children's resilience consisted of the capacity to accomplish age-appropriate developmental tasks, engage in relationships, and understand what was happening to their parents and understand their parent's depression (Beardslee et al., 2009). This intervention received very high ratings in the objective review in the National Registry of Effective Programs (www.nrepp.samhsa.gov).

The second source program is a family-centered intervention for medically ill parents and their children, which has demonstrated improvements in psychological adjustment for both parents and their children receiving the intervention over long-term follow-up in a large-scale randomized trial, and has been adapted for multiple communities (Lester, Rotheram-Borus, Elia, Elkavich, & Rice, 2008; Rotheram-Borus et al., 2004; Rotheram-Borus, Stein, & Lin, 2001). At 6-year follow-up, children of parents with HIV who had been in the intervention condition continued to show benefits across several important domains of adjustment, including more employment, greater school attendance, and reduced childbearing (Rotheram-Borus et al., 2004). In this context, multiple analyses have demonstrated the importance of parental mental health, family adjustment, and parent-child relational factors on child adjustment over time, as well as highlighted key risk and protective factors to guide prevention at a family level (Lee, Lester, & Rotheram-Borus, 2002; Lester et al., 2001, 2008; Rotheram-Borus et al., 2004; Stein, Riedel, & Rotheram-Borus, 1999).

The third is a trauma-focused intervention for children and parents exposed to trauma and loss. In a randomized controlled trial, this team's program has been shown to reduce primary trauma-related symptoms, and improve school and interpersonal functioning among participants (Saltzman, Layne, Steinberg, Arslanagic, & Pynoos, 2002). Their investigation of war-affected youth and families in Bosnia-Herzegovina entailed a nation-wide assessment of the mental health needs for youth in the post-war period, the development and implementation of a trauma/grief intervention, and ongoing research into risk and resilience factors predicting psychosocial adjustment among Bosnian youth (Layne, Saltzman, Savjak, & Pynoos, 1999; Saltzman et al., 2002). A primary goal in this undertaking was to clarify specific mechanisms and pathways of influence leading to childhood pathology and impaired functioning that would be appropriate targets for risk assessment and early intervention (Layne et al., 2008; Saltzman, Pynoos, Layne, Aisenberg, & Steinberg, 2001). Utilizing family-level traumatic stress psychoeducation and skills

to manage the impact of traumatic reminders, this successful evidenced-based program was also used in a trauma-informed intervention for children affected by trauma and loss in other trauma-impacted communities in the United States, and following the terrorist attacks of September 11, 2001 (Layne, Saltzman, & Pynoos, 2002). Described previously, the FOCUS intervention has integrated core elements of trauma-informed psychoeducation and skills building from this program for parents and children (Saltzman, Babayan, Lester, Pynoos, & Beardslee, 2008).

Core Components Adapted for Military Families and Combat Operational Stress

Across foundational interventions, common core components were identified as appropriate for the adaptation of the FOCUS Program. These core components are integrated into FOCUS intervention and are delivered in a flexible manner based on a family's needs and strengths as identified by a structured assessment protocol and family-generated narrative timeline. The core components of FOCUS intervention practices include: (1) psychoeducation on developmental reactions, combat operational stress continuum, and deployment stress reactions across the family; (2) emotional regulation skills; (3) goal setting and problem solving skills for deployment-related challenges; (4) management techniques for discordant exposures, traumatic stress reactions, and traumatic reminders; (5) impact of deployment stress on parenting practices; and (6) focus on understanding the different deployment narratives of the experience of different family members and integrating them (Beardslee et al., 2009). These core components are delivered in an eight-session intervention for military families with children, including parent sessions with one or more child caretakers, child sessions, and family sessions that are designed to develop a shared family narrative, address needed family skills, and make a family plan.

Family-level assessments and psychoeducation in FOCUS are designed to be consistent with the Combat and Operational Stress Continuum Model, the heuristic on which other stress control and resiliency programs in the Navy and Marine Corps are based (Nash & Baker, 2007; U.S. Marine Corps & U.S. Navy, in press). Although developed as a tool for military leaders to promote the psychological health of service members, the Continuum Model may also help families monitor and respond to stress in family members. This evidence-informed model categorizes stress states into four color-coded zones – green, yellow, orange, and red – each representing a different putative level of risk for role impairment and mental disorder based on both stressor exposures and stress responses to those exposures (Nash, in press; Nash & Baker, 2007). This includes teaching about the Stress Continuum in FOCUS family psychoeducation to encourage communication and understanding between service and family members regarding the most potentially toxic operational experiences to which everyone in the family is exposed: trauma, loss, moral injury, and cumulative wear-and-tear. It also reduces obstacles to treatment-seeking posed by stigma since the Stress Continuum model conceives of persistent

distress or dysfunction resulting from exposure to these operational stressors as literal injuries to the brain and mind rather than expressions of personal weakness.

Additional family-level education is integrated into the FOCUS sessions, including education on the impact of deployment cycles and combat operational stress on children of different ages and developmental levels, parenting practices, and family life through guided discussions, and education through feedback from assessments and activities designed to heighten personal and interpersonal awareness. Based on a family's unique circumstances, FOCUS provides information to address the family's issues and concerns. This process of providing information to the family members helps them to feel understood, builds an alliance with the service provider, and serves to normalize and contextualize the family's current difficulties. Family-level education is integrated throughout FOCUS program sessions based on family concerns as they emerge in the context of the family deployment narrative. Key targets of family-level education include: (1) assisting the family in identifying separation, combat, and/or deployment stress reminders that trigger emotional and behavioral responses in the service member and/or family members; (2) linking particular combat or deployment-related stress reactions to breakdowns in family cohesion, communication, routines, and parenting activities; (3) addressing similarities and differences among family members' reactions to the deployment experience (particular attention is paid to separation and reunion experiences, and erroneous or problematic interpretations on the part of individual family members); (4) identifying prior or current strengths within the family linked to deployment experiences (e.g., specific ways in which the family has successfully contended with a challenge or hardship); and (5) linking child developmental information to family-specific assessments and deployment experiences.

Because of the important contributions of perceived and received support to child and family resiliency, social support across the family system and within the community are addressed in the program. This support may include family members' capacity for physical and emotional comforting, their willingness to listen to other family members' fears and worries in a nondefensive manner, their prioritization of family fun and together time, and their ability to provide accurate and appropriate advice and material support. Perceived levels of family support are usually articulated in the course of the program. If levels are deficient, specific forms of family support may then be targeted by prioritizing the family's goals.

Developing Family Resiliency: The FOCUS Core Skills

Through the family narrative, family members reflect on their individual and shared challenges and accomplishments, identify family strengths and plans, bridge estrangements that may have emerged during the process of separation and reunion, and plan for future challenges, such as upcoming deployment separations. An essential component of this process is developing and strengthening skills that support

parental leadership and positive parent-child interactions in the face of heightened stress. Enhancing communication and emotional regulation skills provides children with the opportunity to share with their parents what was particularly difficult and painful about the deployment experience and provides parents with the opportunity to respond to such disclosures in a sensitive and supportive manner. Encouragement of home activities to reestablish strong emotional connections between parents and children serves to address some of the ways in which parent-child attachment relationships can be taxed during deployment. Teaching parents emotional regulation skills allows them to manage their own distress more effectively, serve as models for their children, and become more attuned to and respond more sensitively to their children's emotional needs. Encouraging children to express what was difficult about the separation may allow families to strategize around ways to support children's feelings of connectedness with their deployed parent (and with other family members) during subsequent deployments. Additionally, FOCUS integrates home activities that allow children to track a beginning, middle, and end to their parent's deployment, which may also relieve some of the distress they can experience during parental separations.

Emotional regulation. Throughout all FOCUS activities and sessions, families utilize emotional regulation strategies to monitor emotional states and attendant behaviors. The basic steps in enhancing these skills involve increasing the ability of parents and children to monitor changes or extremes in their emotional states, especially focused on emotional reactions linked to stressful deployment experiences. Key emotions to monitor across the family include anger, sadness, guilt, shame, and anxiety/fear, as these may emerge in relationship to deployment experiences. Another area that is the focus of intervention includes the identification of internal and external reminders that contribute to these emotional reactions and escalations of distressing feelings, and how these may play out in terms of interpersonal behavior within the family. For example, a parent may be helped to understand how his combat-related stress manifests in overly rigid or authoritarian parenting interactions and concurrent reductions in the types of communication that build family closeness. The final steps involve selecting and practicing strategies to effectively manage problematic emotional and interpersonal reactions.

Goal setting. These skills are used to help family members identify how they would like things to be different for their families and how to monitor change, and are practiced throughout the program. Parents and children select family goals during their first sessions and continue to track their own progress on these goals in subsequent sessions. Families are taught to recognize and appreciate incremental improvements in behaviors in themselves and in each other. Structured practice with feedback helps family members to develop realistic goals that are specific, monitored, and adjusted as necessary.

Family communication and development of shared deployment narratives. The centerpiece skill of FOCUS is enhancing communication among family members. A combat deployment and/or high operational tempo may be associated with breakdowns in parental and family communication and a tendency for parents and children

to become emotionally isolated. This may be especially true for family members who keep problems to themselves to avoid worrying or burdening other family members. Although sometimes adaptive, this coping strategy may result in family members keeping silent about personal fears, worries, and needs. Parents are able to first bridge the individual deployment experiences (service member, spouse, or other family caretakers) through the parental narratives. The second step in the family narrative is to elicit the children's deployment experiences and current concerns and difficulties. Following a parental preparatory session, the final step is to provide a structured and safe means of sharing these individual storylines and concerns through the family sessions. This structured communication strategy is designed to enable family members to negotiate the ambiguity of a parent's presence and absence in the context of heightened danger which may accompany the deployment cycle (Faber, Willerton, Clymer, MacDermid, & Weiss, 2008).

Problem solving. Families contending with practical, interpersonal, or parenting challenges often benefit from learning a structured approach to problem solving. The simple four-step model used in FOCUS is demonstrated with a problem identified by the family as pressing and important. The family is asked to practice problem solving at home during the coming week. Through ongoing feedback and adjustment of the technique to fit the family, the family develops the skills and confidence to apply a collaborative problem-solving frame to ongoing and more difficult challenges.

Managing combat and deployment stress reminders. Military families negotiating combat-related deployments may find their service member highly reactive to reminders of threatening situations and loss. In addition, family members themselves may also react to reminders of the difficulties they experienced before, during, and after deployment, including wartime losses within the community. These various reactions among family members may contribute to increased family disengagement, conflictual marital and parent-child relationships, and decreased support among family members. FOCUS provides parents and children with education about combat and deployment stress reminders and how they can impact individual and interpersonal functioning. Parents and children are taught strategies to cope with combat and deployment stress reminders, including identifying the cues in their daily lives that trigger memories of stressful or painful experiences, monitoring their reactions to these cues, communicating to other family members when they are experiencing a stress reminder, and developing a plan for how other family members can respond supportively during these times.

FOCUS Development and Implementation for Navy and USMC

With a foundation in these family-centered theoretical models, FOCUS was adapted from previous child and family interventions by the intervention teams described below, and specifically adapted for military families and deployment stress during OIF/OEF. Following consultation with families and providers at a

United States Marine Corps base, this program was implemented with families in partnership with the installation Marine and Family Services personnel support program. Building on these established interventions, the UCLA team adapted and standardized the manualized intervention as "Project FOCUS" in order to support resiliency and respond to military children and families affected by high operational tempo, multiple deployment stress, and combat operational psychological and physical injuries (Saltzman et al., 2007).

Through funding from the U.S. Navy Bureau of Medicine and Surgery, FOCUS has been implemented as a service demonstration project at selected U.S. Marine Corps and U.S. Navy installations. The program has standardized implementation manuals, training and delivery curricula, and outreach materials to support intervention delivery. In addition, FOCUS utilizes web-based, real-time assessment to provide a family check-in and immediate feedback to the family, enabling them to receive selected psychoeducational materials, a customized intervention protocol, as well as referrals to appropriate levels of services when indicated.

This implementation process has included systematic community, command, and family engagement at each installation in order to acculturate and adapt to the specific military communities served. Key components of this process include embedding the FOCUS program within a continuum of family care by linking to local partners in family support and treatment including chaplains, medical and mental health providers, family service programs, school staff, and others. FOCUS outreach approaches include multiple formats in which a family may enter the program, including group level resiliency skill building, workshops, consultations or individual family resiliency training. By providing FOCUS core components at multiple levels of delivery, FOCUS encourages engagement strategies that meet the family's readiness and availability to access resiliency training services. In addition, FOCUS has been physically located in family-friendly, accessible locations such as within family services centers, chapels, and local base shopping centers, and provides FOCUS resiliency training at nontraditional service hours, including after school, evenings and weekends. In addition to engagement and location considerations, assimilation within the military culture also comes from leadership support. Both at the local installation, as well as at the headquarters level, military leadership support allows for the program to be supported by the community for integration and into "the military way of life."

Conclusion

As the United States military engages in a prolonged war overseas, military families and children continue to experience the significant demands of negotiating high operational tempo deployments. The demographics of U.S. active component military have changed in the past several decades to include a much larger proportion of service members with partners and children, defining a growing need to support the well-being of both service members and their family members. While many

studies have shown that military families and children demonstrate high levels of psychological functioning and resilience, emerging evidence suggests that the operational wear and tear of wartime deployments accumulates, and may present heighted risk for adjustment problems in children and family members. In addition, many service members return home from war with combat-related mental health problems and physical injuries, with the potential for direct and indirect psychological impact on their spouses and children over time (Eaton et al., 2008; Flake et al., 2009; Lester et al., 2010; Milliken, Auchterlonie, & Hoge, 2007).

While more information is needed to clarify the longitudinal and developmental impact of wartime deployments for military children and families, foundational research across the developmental and trauma literature demonstrates the consistent finding that children's levels of psychological distress and adaptive functioning are linked to parental levels of distress, suggesting the importance of targeting preventive interventions at a family level. Further, family-level prevention provides an opportunity for engagement of service members and spouses in interventions that may support recovery from psychological injury, while also promoting psychological health in children.

Planning for the long-term public health needs of service members and families experiencing extended and frequent deployments should take into account the impact on the family members, spouses, and children. Unlike during previous military conflicts, the current state of early traumatic stress intervention and prevention science provides a strong foundation to inform translational preventive approaches to support families and children at risk due to combat operational stress. In recent years, there has been a shift in focus to prevention of mental health disorders (National Research Council and Institute of Medicine, 1994, 2009). Programs that may potentially mitigate the impact as described here need to be examined for benefit and field-tested in order to guide a public health response. The process of demonstrating that interventions are useful in a variety of contexts is an essential component of establishing validity of an intervention approach. This requires a balance between methodological rigor and sensitivity to ecological issues, as well as a response to the cultural context surrounding community needs.

To guide such an approach to family-centered prevention, this chapter has summarized the foundational research in the development of traumatic stress interventions and family-centered prevention science, using lessons from the experience of preventive interventions for children of medically ill parents, children with depressed parents, and families affected by war trauma to inform an intervention response for military families at risk. The urgent demands of a country at war point to the need for a systematic rapid deployment of existing evidence-based approaches that may be adapted to meet the needs of military families. Such interventions must be designed to be adaptable not just to a single phase of deployment, but need to recognize the cumulative experience of multiple deployments for military families by assisting with reintegration tasks and preparing for future separations and related challenges. In addition, the implementation of prevention programs to support military families and children should include ongoing evaluation to enhance program implementation and impact over time.

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Chapter 9
Understanding the Deployment Experience for Children and Youth from Military Families

Anita Chandra, Rachel M. Burns, Terri Tanielian, and Lisa H. Jaycox

Abstract This chapter contains a review of what is known about the stressors that service members experience during deployment, and what aspects of that deployment may contribute to emotional changes for families. The review specifically synthesizes research on deployment and child well-being, including the impact on child academic and mental health outcomes, in conflicts prior to Operation Enduring Freedom (OEF)/Operation Iraqi Freedom (OIF) as well as during OEF and OIF. Findings from a study to expand our understanding of how OEF/OIF has affected children are summarized, with particular attention to experiences for children from Active and Reserve Component families. The information in this chapter can therefore help to guide efforts already underway to support military families.

Over the past few years, the health and mental health of service members returning from Operation Enduring Freedom (Afghanistan) and Operation Iraqi Freedom (OEF and OIF, respectively) have come to the forefront of popular media and policy making. During a time when the operational tempo of the current conflicts is unparalleled in the history of the U.S. all-volunteer force (Belasco, 2007; Bruner, 2006), several research studies have examined the experience of deployment on U.S. service members. Yet relatively little research has been conducted about the impact of the service members' deployment to OEF/OIF on children and families (MacFarlane, 2009). Nonetheless, even in the absence of such information, numerous resources aimed at increasing support for military families have been developed during the past few years.

This chapter contains a review of what is known about the stressors that service members experience during deployment, and what aspects of that deployment may contribute to emotional changes for families. The chapter specifically focuses on the research on deployment and child functioning, including the impact on academic and mental health outcomes, in conflicts prior to OEF/OIF as well during these current wars. Findings from a study to expand our understanding of how OEF/OIF have impacted children are summarized. The information in this chapter can therefore help to guide efforts already underway to support military families.

A. Chandra (✉)
RAND Corporation, Arlington, VA, USA
e-mail: chandra@rand.org

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Impact of Deployment on Service Members and Families

As of 2010, there are currently 1.98 million children with one or both parents in the military (1.25 million with parents in the Active Component and 728,000 with parents in the Reserve Component) (Department of Defense, Profile of the Military Community, 2009). According to Pentagon data, between 2001 and 2007, over 800,000 parents had deployed with the U.S. military, most to Iraq or Afghanistan, with more than 212,000 deploying twice, and 103,000 deploying three or more times. As a result, many children have been affected, and there is a need for information about the impact of deployments on them (APA Presidential Task Force, 2007; DoD Mental Health Task Force, 2007).

While the number of studies on this topic is growing, there are relatively few that specifically focused on the impact of OEF/OIF deployments on families. However, prior research has examined the experience of deployment on U.S. service members and families in other contexts, and some of those studies have also examined the impact on children. In the following sections, relevant findings from the literature on the impact of deployment on children and families are summarized. Gaps in our understanding about the functioning and well-being of children of deployed parents in the current conflicts, both during and after deployment, are identified.

Service Members Experience Significant Stressors During Deployment that May Affect the Lives of Family Members

The stressors that service members face during deployment may influence the experience of family members, both during the deployment and after the return home. During deployment, service members experience several pressures, obstacles, and challenges. For example, service members endure strenuous training activities and physical challenges, long working hours and an intense working pace, infrequent breaks and little time off, close quarters and a lack of privacy, extreme environmental conditions, uncertainty and exposure to danger, and separation from family and friends (Campbell, Ritzer, Valentine, & Gifford, 1998; Halverson, Blies, Moore, & Castro, 1995; Pleck, 1997). Many service members also experience intense trauma, such as witnessing injury or death of friends and/or noncombatants, hand-to-hand combat, explosions and resulting blast injuries, and exposure to decomposing bodies (Hoge et al., 2004, 2006; Tanielian & Jaycox, 2008). Additionally, those service members who do not deploy face stress as a result of increased workload and responsibilities (Hosek, Kavanagh, & Miller, 2006).

Although deployment is highly stressful and taxing, many service members find that deployments have beneficial qualities as well (Golding & Griffis, Griffis et al., 2002, 2003; Lakhani & Abod, 1997). They report that the work they do while deployed is often challenging and fulfilling and leaves them with a sense of accomplishment. Camaraderie and unit cohesion are developed during the deployment and service

members report that their unit often becomes like a family. Additionally, there are financial incentives to deploy, such as Family Separation pay, Hostile Fire pay, and tax exemptions (Hosek et al., 2006). It is useful to consider whether these benefits for service members confer a positive impact on children and the at-home caregiver.

The relative influence of the stressors and benefits of deployment has several potential consequences for service members as well as their families. Attitudes and experiences related to deployment may impact service members' decisions to remain in the military. Some service members return home from deployment with physical, psychological, or cognitive injuries (Tanielian & Jaycox, 2008; Karney, Ramchand, Chan, Calderone-Barnes, & Burns, 2007; Milliken, Auchterlonie, & Hoge, 2007; Hoge et al., 2004), which may result in difficulties in maintaining relationships with their spouse and children. Despite these potential consequences for families, we have few studies to date that specifically link the experiences of service members and health and well-being outcomes for their children.

Military Families Experience Emotional Changes During the Course of Deployment

Notwithstanding the comparative lack of empirical evidence on the impact of deployment on children from military families, researchers have begun to construct a framework for considering the emotional toll of the deployment stages. The Emotional Cycle of Deployment for Families framework was developed as a theoretical model for understanding the phases and transitions that military families undergo as part of the deployment process in order to better determine the most effective intervention strategies (Pincus, House, Christensen, & Adler, 2001). This model has not been tested, but is rooted in the professional and personal experiences of military psychiatrists.

The cycle is divided into five stages that correspond to the military deployment cycle: *pre-deployment* (beginning with notification of pending deployment and ending when the service member departs), *deployment* (the first month apart), *sustainment* (lasting the second month of deployment and until the service member returns), *re-deployment* (the month prior to returning home), and *post-deployment* (initiated by the service member's return). Post-deployment includes not only the service member's return, but resetting and sometimes getting ready to go rapidly back into pre-deployment (Pincus et al., 2001).

According to this model, pre-deployment generally brings heightened anticipation of loss, as well as denial that the service member is actually leaving. The service member will often train for long hours while simultaneously trying to get the family's affairs in order. The resulting stress may stimulate an increase in arguments between the service member and spouse. Further, consistent with other stress impact models that include children such as family stress theory (McCubbin, 1979); children experiencing this environmental stress may in turn have difficulties. Further, stressors that change the family social system (Burr, 1973) such as

deployment or impending separation can affect children. For example, children may feel the effects of the stress they witness at home between service member and spouse and may act out, have tantrums, and demonstrate regressive behaviors, symptoms consistent with other studies of stress and children (Compas, Howell, Phares, Williams, & Guinta, 1989; Pffeferbaum, 2000). Service members often view the pre-deployment phase as an extension of deployment due to the high levels of stress felt by themselves as well as their family members (Hosek et al., 2006), thus this may filter to children.

After the service member leaves (deployment), the family experiences mixed emotions of anger, relief, disorientation, feeling overwhelmed, grief, sadness, and loneliness. During this phase, family members may also have difficulty sleeping. Sustainment is the phase during which the family adjusts to the service member's absence and develops new routines and ways of living. The family may begin to feel more in control of the situation and less overwhelmed. However, communication with the service member may be difficult as a result of the unreliability and other limitations of email and long-distance forms of communication. During this time, children may react based on their stage of development. Based on family stress theory and our understanding of developmental stages, infants may refuse to eat or become enervated (i.e., lose energy) (Pffeferbaum, 2000). Toddlers tend to mimic their adult caregivers' reactions to the deployment, and may cry, throw tantrums, and exhibit irritability and sadness. Preschoolers may display regressive behavior, irritation, sadness, and aggressiveness and may have somatic complaints. School-age children may also complain of body aches, whine, and display aggression (Gunnar & Quevedo, 2006). Teenagers are likely to isolate themselves, display irritation, rebel, fight, and may engage more frequently in risky behaviors (Petersen, 1982).

During the month prior to the service member's return (re-deployment), the family is anxious in anticipation of the homecoming and may experience conflicting emotions (excitement and apprehension) in preparation for the return of the family member. When the service member returns (post-deployment) and begins to reintegrate, there may be stress as a result of the necessary adjustments and changes in routines (Hosek et al., 2006). MacDermid (2006) conducted focus groups among those in the Reserve Component and found that less than half of participants reported a honeymoon period (time of heightened joy and well-being occurring at the time of return followed by a decline in well-being shortly after). Based on studies of parent–child separation and family stress, we can also begin to differentiate the impact of parental return from deployment by developmental age and stage. Infants may be unfamiliar with the returned parent and may cry when held. Toddlers may also be hesitant to be affectionate with the returned parent. Preschoolers may feel scared or angry. School-age children may crave attention from the returned parent while teenagers may isolate themselves (Kelley, 1994; Rutter, 1971; Woodward, 2000).

While the Pincus et al. (2001) model provides a useful tool for understanding what may change for families as they progress along the deployment cycle, we have little research to validate this model particularly during the stages of deployment of the current wars. We can extrapolate from other studies of parental separation and family stress (McCubbin, 1979; Compas 1989), but many questions remain

unanswered regarding the specific impact of deployment. Recent interviews and focus groups have found that participants' descriptions of stages before and during deployment are similar to those described in the Emotional Cycle of Deployment, but that the reunion process may be more complex (MacDermid, 2006).

Further, we do not know if families' emotional experiences across this cycle differ by gender of child, demographic or military background of the family (e.g., service branch or component), or the length or number of deployments.

OEF and OIF Deployments Impact Marriage Quality and Child Outcomes

Some concern exists that stress of deployment could contribute to dissolution of marriage, but a recent RAND report examined marriages of service members and found little evidence to support this idea. However, the authors suggest that deployment may impact other aspects of marriage, such as quality (e.g., the level of satisfaction with the marriage) and child outcomes (Karney & Crown, 2007). They also suggest that the military recruits from populations that may have a higher risk of marital dissolution and have policies in place that encourage military members to marry (e.g., health care benefits). Thus, the military may incentivize marriages that individuals would not have otherwise entered.

Impact of Deployment on Children

There are conflicting findings in the literature pertaining to the well-being of children and adolescents from military families in general, and findings about the impact of deployment should be interpreted in this context. One researcher found that the incidence of behavioral disorders was higher in a sample of children and adolescents seen at a military health care clinic relative to children and adolescents seen at a health care clinic for civilians, suggesting that the military lifestyle contributes to a "military family syndrome" (Lagrone, 1978). More recent research has challenged these claims and has indicated that children in military families have similar, if not better, mental health outcomes than their civilian counterparts (Jensen, Xenakis, Wolf, & Bain, 1991; Jensen et al., 1995). For example, Jensen and colleagues administered the Diagnostic Interview Schedule for Children (DISC) to military children and adolescents and their parents and found that levels of psychopathology were similar to those of comparable civilian populations (Jensen et al., 1995). However, even if average military children are similar to civilian children, we know very little about the impact of deployment on children, or whether the impact of this stress is similar to what is observed in civilian children exposed to stress. Further, we have relatively little information on the general health and well-being of these children from today's military families (Cozza, Chun, & Polo, 2005).

Deployment May Have a Negative Influence on Child and Adolescent Behavior and Mental Health Outcomes

Early research efforts suggested an association between military parent separation and children's behavior and identified findings consistent with family stress theory. Hillenbrand found that parental absence at a younger age was associated with higher levels of aggressiveness and irritability among boys in the sixth grade (Hillenbrand, 1976). Yeatman administered a questionnaire to parents of children in a pediatric clinic to assess the impact of father absence (during deployment on an unaccompanied tour) on externalizing behavior and found that 34% of parents who reported problems with a child stated that the child exhibited disciplinary problems; 38.1% of a subsample of families reported readjustment problems upon the father's return (Yeatman, 1981).

Several studies of children of deployed parents have indicated that deployment is associated with higher levels of internalizing behaviors (e.g., feeling sad, fearful, or over-controlled). A retrospective study of children of Navy fathers in a private psychiatric hospital indicated that paternal absence lasting for at least one month was associated with greater depression and anxiety among children (Levai, Kaplan, Ackermann, & Hammock, 1995). Jensen and colleagues studied children of U.S. Army officers and senior enlisted personnel and found that children with absent fathers had significantly higher levels of depressive symptoms and anxiety than those children whose fathers were present; length of absence but not total number of absences was correlated with child reported symptoms of depression and anxiety (Jensen, Grogan, Xenakis, & Bain, 1989). Jensen and colleagues also examined internalizing behaviors (e.g., sadness) of children whose parents deployed during Operation Desert Storm and found that those with parents who deployed had higher levels of depression and anxiety than those whose parents were not deployed and that boys were more likely to exhibit symptoms than girls (Jensen et al., 1996).

Parents who were the primary caregivers during deployment reported via questionnaire that those children whose parent deployed with the Army during Operation Desert Storm had higher levels of internalizing behavior relative to those children whose parent was not deployed; however, only 6% of the study sample had symptoms that warranted mental health treatment (Rosen & Teitelbaum, 1993). Similarly, Kelly and colleagues surveyed mothers in the Navy and found higher (but not problematic) levels of internalizing behavior among children of deployed Navy mothers relative to children of non-deployed Navy mothers (Kelley et al., 2001). Children with mothers serving in the Air Force were more likely to exhibit symptoms of anxiety and depression when the mothers had difficulty providing childcare, when the mothers were deployed to a war zone, and when there were higher degrees of change in the children's lives (Pierce, Vinokur, & Buck, 1998).

The Differential Impact of Maternal Versus Paternal Separation Has Been Explored, but Further Study Is Needed

One group of researchers examined the effects of maternal versus paternal separation. A study of 110 military children found that the effects of mother absence on a child's psychological functioning did not significantly differ from the effects of father absence. However, when examined as individual criteria, certain aspects of psychological functioning (peer relationships, handling learning demands, and expressing feelings) and physical health indicators were more problematic for children separated from their mothers than for those separated from their fathers (Applewhite & Mays, 1996). A more extensive and representative research sample and a more comprehensive set of outcomes is needed to further our understanding of the differences between maternal and paternal deployment and the impact on children's well-being. Given the current context of dual deployments and the increase in maternal deployments during OEF/OIF, we need to understand if children are experiencing more difficulties with maternal absence in order to inform our interventions for this population.

A Small Number of Studies Have Focused on the Mental Health and Well-Being of Children of Service Members Deployed for OEF/OIF

There have been a few OEF/OIF studies on the emotional functioning of younger children and adolescents during deployment. Flake et al. assessed the psychosocial profiles of children aged 5–12 years during parental deployment and found that 32% had were in the "high risk" category for psychosocial morbidity, about 2.5 times that of the national norm (Flake, Davis, Johnson, & Middleton, 2009). Additionally, parents experienced high levels of stress as reported on the Parenting Stress Index (42% of the time) and the Perceived Stress Scale (19% met criteria indicating "at risk" status). Parental stress was the most significant predictor of the child's psychological functioning during wartime deployment. College level education, military support, and community support were associated with lower levels of children's psychosocial symptoms and parental stress.

Adolescents have reported changes in the relationship with the deployed parent, concern and anxiety about the deployed parent's well-being, increases in responsibility and demonstrations of maturity in caring for younger siblings and completing household chores, bonding with younger siblings, changes in daily routine due to transportation or financial reasons, and worse performance in school. In this study by Huebner and Mancini (2005), teen focus group participants also indicated feelings consistent with the symptoms of depression, hiding their feelings, lashing out in

anger, disrespecting parents and teachers, and worrying about the deployed parent. The intensity of these behaviors ranged from slight to severe (some of which required counseling or therapy).

Barnes and colleagues found that adolescent dependents of military members that had been deployed to Iraq during OIF in 2003 had significantly higher levels of perceived stress, systolic blood pressure, and heart rate than the civilian control group (Barnes, Davis, & Treiber, 2007). The authors suggest that this youth population should be closely monitored during wartime and that stress-reducing interventions for this population should be evaluated.

Impact of Deployment on Children's School Performance Is Unclear; Prior Studies Suggest Decreases or Negligible Impact on Academic Performance

Early work from the 1960s and 1970s, which examined the relationship between parental deployment and children's academic performance, yielded highly variable results. One study found that a father's absence had a measurable effect upon scholastic aptitude, which was based on the age of the child during the absence. The study suggested that early and long separations result in greater verbal abilities while late and brief separations may produce elevation in math ability (relative to verbal) (Carlsmith, 1964). Hillenbrand examined classroom performance measures among children of deployed parents and found that older male children (but not male children with older siblings) had increased mathematical and analytical abilities; father absence was associated with decreased quantitative abilities among female children (Hillenbrand, 1976).

More recent studies have similarly inconsistent results but more often indicate a negative impact of deployment on academic performance or little impact at all. A study of children of fathers deployed for 8 months or longer found that father absence was negatively related to academic performance measures as measured by the Classroom Adjustment Rating Scale (Hiew, 1992). Pisano and colleagues found that daughters of deployed service members demonstrated a significant decrease in reading comprehension scores during Operation Desert Storm deployment; however, all other achievement test scores were not statistically different between children of deployed and non-deployed parents (Pisano, 1996).

Academic problems appear to be related to other difficulties in children's lives. For example, Rosen and colleagues found that among children with fathers deployed with Operation Desert Storm, those with academic problems were more likely to display immature behavior and have discipline problems at home, eating and sleeping problems, and a perceived need for counseling (Rosen & Teitelbaum, 1993).

Given these mixed findings, further inquiry is needed into factors that contribute to poor academic performance during deployment and also into other changes in academic behavior not captured by test scores. For example, we do not have data

on changes in classroom behavior, homework and task completion, and attendance during the deployment.

Studies on the Impact of Deployments to Iraq and Afghanistan on Children's Academic Performance Indicate Modest Negative Effects

There are few studies that have specifically assessed OEF/OIF on child academic outcomes. One study found that deployments to Iraq or Afghanistan have modest effects (measured as decreases in test scores) across most academic subjects and that these effects may be long-term (Engel, Gallagher, & Lyle, 2006). The largest adverse effects were found among younger children, boys, minorities, children whose parents are married, children whose parents have lower Armed Forces Qualification Test scores, and children whose parents have lower education. Lyle found that parental absences were associated with lower test scores (Lyle, 2006). This effect was greatest among those with single parents, children with mothers in the army, children whose parents had lower abilities (as indicated by Armed Forces Qualification Test scores), and younger children.

Future work in this area should examine children of parents in all services and components. Longitudinal analysis would provide more information about the long-term impact of parental deployment on educational outcomes, particularly since children often experience significant school transitions during deployments.

Studies of the Prevalence of Child Maltreatment During OEF/OIF Indicate that Deployment May Be Associated with Increases in Abuse

Deployment-related stress may manifest as child maltreatment (e.g., physical, sexual, emotional, or other abuse and neglect). In a time-series analysis of Texas child maltreatment data to assess the rates of child maltreatment among military and non-military populations before and during the military options in the Middle East, the rate of child maltreatment was relatively stable between 2000 and 2003 among non-military families (Rentz et al., 2007). However, the rate of maltreatment among military families increased at the end of 2002 and increased dramatically during the beginning of 2003, coinciding with intense combat operations in the Middle East. Another study utilized the Army Central Registry database (which contains records of child maltreatment incidents) and found that maltreatment of children occurred more frequently at home while soldiers were engaged in combat-related deployments (Gibbs, Martin, Kupper, & Johnson, 2007).

These studies highlight more extreme examples of consequences of deployment-related stress and the need for interventions. Future research efforts should examine ways to mitigate this stress and evaluate programs targeting these populations and providing assistance to families and children.

Taken Together, this Research Suggests that Deployment Has a Potentially Significant Impact on Children

Research conducted prior to OEF and OIF indicates that families experience difficulties as a result of deployment. Specifically, parental deployment can negatively affect child health and well-being, including increases in psychosocial morbidities, difficulties in school adjustment, and lower test scores. Further, the process of deployment (from pre-deployment through sustainment) may result in poorer caregiver mental health and marital quality, which can impact child well-being. However, many of these results are inconclusive given challenges of sample representation, study design, and/or a limited account of potentially confounding variables (e.g., prior family relationships, existing child behavioral issues).

A Pilot Study Examining Deployment Experience among Military Children and Youth Attending a Summer Camp Program

This literature review indicates that while important research on the experience of deployment for military families has been conducted, many questions remain unanswered about the impact of OEF and OIF on children and families. For example, most of the research has been conducted during prior conflicts, thus we still know very little about how children are faring during OEF and OIF specifically. In addition, we have little information on whether child and caregiver functioning varies by deployment status as articulated in Pincus' stages of deployment (2001), and how the impact of deployment stress mirrors or differs from other studies of children experiencing stress (Compas et al. 1989; Zimmerman et al. 2000). For example, how do the challenges faced by children differ during deployment versus post-deployment or reintegration? In addition, there are relatively little data on whether children of Active versus Reserve personnel have different experiences with deployment. Given that more Reserve Component personnel have been deployed during OEF and OIF than prior conflicts (MCEC, 2007), more examination is needed on how their families are functioning. It is hypothesized that Reserve families may be struggling more with deployment during OEF and OIF because they are "suddenly military" and disconnected from social support networks that have familiarity with the unique deployment experience. Yet, we have no data to examine whether those differences exist. The study described in the rest of this chapter provides new information about

the experience of deployment for children with attention to these differences and offers insight which will shape future studies (see Chandra, Burns, Tanielian, Jaycox, & Scott, 2008, for a full report).

Methods

Sample characteristics. Children ($n = 192$) and their caregivers ($n = 192$) were recruited from among those attending *Operation Purple*®, a summer camp sponsored by the National Military Family Association (NMFA) for children ages 7–17 years whose parent or family member had deployed in the past, was deployed at the time, or would be deploying in the near future (99% response rate among those who arrived at camp). Our sample also included the non-deployed parent or caregiver. Children were assessed at three time points: baseline (before camp started), at the end of camp for a satisfaction survey only (5 days later), and three months after camp concluded; caregivers were assessed at baseline and at three months following the end of camp. We received complete sets of surveys (baseline and follow up from both child and caregiver) from 57% of families ($n = 110$). Nearly 39% of the sample was in the Reserve Component (Guard or Reserves). The Army was the most heavily represented service. Specifically, 45% of deployed parents were Army, Army Reserve, and Army National Guard, followed by the Navy or Navy Reserves (19%). The average age of participating children was 10.4 years at baseline (age ranged from 7 to 14 years). About half of the sample was comprised of boys (51%) and most of the children who participated in the survey were white, non-Hispanic (83%). The majority of caregivers participating in the study were mothers of the children attending *Operation Purple*® (81%), and 71% of the respondents were the spouse of military personnel. At baseline, nearly three-quarters of the families had a parent who was recently deployed and just returned or a parent who was currently deployed, and 15% were preparing for deployment. The majority of participating families had experienced at least one deployment since 2002 (92%) and average number of deployments for OEF/OIF was 2.8 (standard deviation = 1.6) yet a substantial number of families had experienced three or more deployments (55%). Among families experiencing a deployment at the time of the baseline survey, nearly half of the service members had been gone over 6 months (48%). Of those families who completed the baseline and follow-up surveys, 23% had parents who were deployed over the entire course of data collection for the study (August–November 2007). Please note that participants to Operation Purple are a service-seeking or program-seeking population of military families, thus it is important to place study findings in this context throughout results discussion.

Measures. The baseline child surveys contained items assessing child demographics (e.g., age, gender), current behavior and functioning, views on the impact of deployment using a set of newly created items, and two open-ended items querying children about parental deployment and the experience of deployed parent reintegration. The baseline caregiver surveys included items assessing their views on the

impact of deployment on their own life as well as their child's well-being. Findings and detailed measures information related to the child and caregiver functioning and well-being questions are presented elsewhere (Chandra et al., 2008).

Analysis. This analysis focuses on the baseline and 3-month child and caregiver surveys only, with attention to the deployment experience items. Descriptive and bivariate analyses were conducted in SAS version 9.1 to describe child and caregiver experience with deployment. We also assessed whether that experience differed by service component (Active Component vs. Reserve Component) and deployment status. In this analysis, we primarily relied on baseline data; however, we also assessed the impact of deployment status over the course of the study using the follow-up survey data where appropriate. We used chi-square statistics to test for categorical differences and *t*-tests for differences in continuous measures. While we conducted a number of analytic tests, this is an exploratory study and given the nature of multiple comparisons testing, some findings may be significant by chance and should be interpreted with caution. In addition, we conducted significance testing only on questions that provided close-ended options. For open-ended items ("write-ins"), we often categorized and enumerated the frequency of responses but do not report *p*-values.

Key Findings

In the next sections, we summarize findings on the impact of deployment on children from the perspective of the child and caregiver. Where relevant, we note differences by service component (Active vs. Guard/Reserve) and deployment status (deployment vs. reintegration).

Child perspectives on deployment. Children in our sample expressed worry about their deployed parent and cited changes at home, including missing usual activities. These findings are consistent with Pincus' model (2001) that deployment may bring anxiety about changes in routines, particularly for school-age children. Children were asked to rate their level of worry about deployment and many youth reported *a lot of worry* (on a scale including a little, some, a lot) about their deployed parent (51%). Children also worried about their home caregiver (the non-deployed parent or caregiver) while a parent was deployed (34%).

Many children described difficulties from missing the parent and the worry they feel about the deployed parent. For example, one child shared that it made her sad to "only be said good night by one grown-up voice." Consistent with family stress theory, the stress experienced by the caregiver appeared to have an impact on the child. For example, children listed the challenges of helping their non-deployed parent/caregiver during the deployment. One child explained that he "had to help my mom because she was very stressed." In addition to the difficulties at home, more than half of the children wrote that many people did not understand what they were going through as a result of the deployment. They also shared that it was hard when people did ask about their deployed parent because they did not know how to respond and it was uncomfortable. A child offered that it was troubling to deal with "rapid fire" comments from

Table 9.1 Child response to parent deployment by component (child report at baseline) ($n = 192$)

Statement	% worry a lot	
	Active ($n = 118$)	Guard/Reserve ($n = 74$)
I worry about my military parent while he/she is deployed	53.3	47.1
I worry about the parent who takes care of me while my parent is deployed	38.2	26.5
My military parent talked to me about deployment	30.3	22.1
I like to keep track of the news about the war	22.7	26.5
I get to do more things on my own	28.9	29.9
I have trouble with schoolwork when my parent is deployed	19.1	11.9
I spend a lot of time with other military kids while my parent is/was away	26.7	14.7
While my military parent was away, my parent at home acted the same as always	40.0	33.8
Teachers understand what it is like for me to be a military kid	34.8	26.9
Kids who don't have families in the military understand what it is like for me to be a military kid	20.2	14.9

family and friends that he perceived as insensitive such as: *Oh, how are you? Have you talked to your dad? When have you seen him? Is he coming home for Christmas?*

We also asked children in our sample about the support they received from peers and teachers. Table 9.1 displays other findings pertaining to children's experiences with deployment by component. Children from Guard or Reserve families had less connection with people who understood military life. These children also reported that they do not have an opportunity to spend time with other children from military families (15 vs. 27% Active Component) and do not have teachers who understand what life is like for them to have a parent serving in the military (27 vs. 35% Active Component). Children of Active component service members reported more trouble with schoolwork while their parent is deployed (19 vs. 12% Guard/Reserve).

The analysis also explored whether there were significant differences in the experience of deployment by age, gender, race/ethnicity and number of deployments. There were no statistically significant differences by gender, race/ethnicity or number of deployments. However, there were notable differences by age. More children under 11 years compared with older youth 11–14 years believed that teachers knew what life was like for them to be in a military family (37 vs. 26%, $p < 0.01$). On the other hand, younger children (under 11 years) reported more difficulty with schoolwork when the parent was deployed (23 vs. 10%, $p < 0.05$).

Children in our sample whose parents were experiencing deployment during this study time period shared that they were spending more time with other military youth (32%). However, these children reported that the experience at school and with peers was difficult for them. Compared to children who were not experiencing a current deployment, the vast majority of children who had a parent that was deployed felt that teachers (80%) or other youth (96%) understood very little of what life is like for them ($p < 0.05$).

Child perspectives on parental reintegration. When the deployed parent returns home, children shared that there were some challenges, including confusion about who is running the household, another finding that aligns with Pincus' model (2001) suggesting role confusion upon parental return. While the children were grateful to have that parent at home, children wrote about the difficulties of reengaging that parent in a new home routine: *Me and my mom had a routine and when dad came home we had to get to know a new routine.*

All of the youth of Reserve Component families cited difficulties of returning to life and the home routine, whereas this was less of an issue for children of Active Component personnel (100 vs. 55%). Among youth whose parents returned by the time of the follow-up survey, approximately 57% noted that getting to know a parent again was difficult. Children discussed that becoming reacquainted with that parent and communicating with him or her creates some stress. One child talked about not knowing where to turn for his role models: *I used to always look towards my mom for answers, now it's hard switching back to both parents.*

Further, children reported that they could see how difficult it was for that deployed parent to learn home life again. Approximately 30% of children indicated that dealing with the deployed parent's transition home was difficult. A child wrote: *I had a problem with him trying to get back into the swing of things. It took him a long time. He went slow and it made me stress out a lot.*

Caregiver perspectives on child experience with deployment. We also examined the impact of deployment more specifically by asking caregivers about their perspectives on how their child has been affected by the experience. We examined whether there was a differential impact by service component (Table 9.2). Nondeployed caregivers in our sample reported that deployment had affected children in terms of increased loneliness and more home responsibilities. Overall, most caregivers reported that their children were very proud of their deployed parent. However, many caregivers from both Active Component and Guard/Reserve families indicated that their child became more easily upset or agitated as result of the deployment. There were notable differences by component. First, a greater percentage of parents from Active Component families believed their child felt lonely

Table 9.2 Impact of deployment on child (caregiver report) by service component ($n = 192$)

	% Responding true	
	Active ($n = 118$)	Guard/Reserve ($n = 74$)
Feels proud	97.1	98.5
Feels lonely[a]	82.5	69.2
More responsibilities at home	63.1	76.9
Takes more care of siblings	58.0	64.5
Doesn't enjoy activities as much	40.8	29.7
Acts more independently[a]	74.8	89.1
Acts more mature	75.7	85.9
Gets more easily upset or agitated	65.1	66.2

[a]Significantly different at the $p < 0.05$ level

(83 vs. 69% of Reserve Component, $p < 0.05$) and did not enjoy usual activities as much (41 vs. 30% of Reserve Component). On the other hand, caregivers from Guard or Reserve families noted that their children had more responsibilities at home (77 vs. 63% of Active Component, $p < 0.10$) and acted more independently as a result of the deployment (89 vs. 75% of Active Component, $p < 0.05$).

Conclusion

This literature review and pilot study provides an important snapshot of the deployment experience for children and non-deployed parents, two groups often left out of military health research. In interpreting our findings from the pilot study and drawing conclusions from them, it is important to bear in mind the unique characteristics of our study sample, which consisted of self-selected military families who were seeking a support program. However, this pilot study offers insight into how families from the Active Component versus Guard/Reserve may be experiencing deployments differently.

Children across service component noted that deployment affected their home caregiver's (or non-deployed parent/caregiver) behavior. Children from Guard/Reserve Component families identified more difficulties with parent readjustment after a return from a deployment. Broadly, children of Active component personnel expressed greater worry about their home caregiver during deployment and cited trouble with schoolwork. On the other hand, children of Reserve Component families were more externally focused, indicating greater trouble with the fact that peers and teachers had little understanding of their deployment experience. Differences by component also were noted with respect to caregiver report. Active Component families cited more child loneliness and disengagement, whereas Reserve Component families reported increasing the roles and responsibilities of the child.

The findings of this pilot study coupled with the literature review highlight two main directions of further inquiry for research on military children. First, the pilot study offered new insight on the differential experiences of Active Component and Guard/Reserve families, which merits further investigation. For example, additional research should continue to explore how family processes are affected by deployment and reintegration and what social supports and resources can be provided to help non-deployed caregivers maintain the household and care for children who may be experiencing behavioral and emotional difficulties. Second, this study explored analyses of child functioning at two points in time only; additional research should probe whether and how deployment stressors change over time and if this varies for children by military, deployment, or other demographic factors. Further, longitudinal analysis would provide more information about the long-term impact of parental deployment on health, educational, or social outcomes, which has been noticeably absent from prior research that is mostly cross-sectional. In fact, a longitudinal study with a larger, more representative sample is underway (Chandra et al., 2010) and allows for more in-depth examination of how child functioning and well-being

changes over the course of the deployment cycle. Given the unique characteristics of multiple and lengthy deployments, understanding the potentially cumulative impact of these parental absences on child well-being is long overdue.

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Part III
Family Sequelae of Wounds and Injuries

Chapter 10
Trauma, PTSD, and Partner Violence in Military Families

Casey T. Taft, Sherry M. Walling, Jamie M. Howard, and Candice Monson

Abstract Intimate partner violence (IPV) is a public health problem in the United States that may be particularly elevated among military populations exposed to trauma who evidence symptoms of posttraumatic stress disorder (PTSD). As this chapter illustrates, evidence indicates that the development of posttraumatic psychopathology, and particularly PTSD, is strongly associated with the development of violence and abusive behavior in relationships. In addition to the review of research on the association between PTSD and IPV in military populations, in this chapter we discuss information processing models explaining the link between PTSD and IPV and potential moderators of this association, as well as strategies to prevent and treat IPV in this population. Recommendations for future work in this area of investigation and program development are also provided.

Intimate Partner Violence in Military Populations

Intimate partner violence (IPV) is a serious national public health problem with significant societal costs. Approximately 1.5 million women are physically assaulted and/or raped by an intimate male partner in the United States annually, according to data obtained from the National Violence Against Women Survey (Centers for Disease Control and Prevention, 2003; Coker et al., 2002; Tjaden & Thoennes, 2000). Although no published investigations have reported on rates of IPV among Operation Enduring Freedom/Operation Iraqi Freedom (OEF/OIF) military personnel, previous investigations of other cohorts provide data suggesting that IPV is a significant concern among military families. Prevalence rates of physical IPV perpetration among Active Component servicemen and veterans have varied widely in these investigations. Yearly rates of physical IPV range from 13.3% (Heyman & Neidig, 1999) to 47% (Bohannon, Dosser, & Lindley, 1995) in studies of Active

C.T. Taft (✉)
National Center for PTSD, VA Boston Healthcare System and
Boston University School of Medicine, Boston, MA, USA
e-mail: casey.taft@va.gov

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Component servicemen, and past year prevalence rates range from 13.5% (Jordan et al., 1992) to 58% (Hiley-Young, Blake, Abueg, Rozynko, & Gusman, 1995) in studies of military veterans. When only looking at nationally representative military sample studies not selected on the basis of psychopathology (e.g., inpatients with PTSD), IPV perpetration rates range from being comparable to those obtained from representative studies of the general population to three times higher than general population rates (see Marshall, Panuzio, & Taft, 2005).

Although relatively little systematic research has been conducted on the effects of IPV perpetration in military populations, available evidence suggests that IPV in this population has far-reaching consequences that are similar to those suffered among civilian samples. For example, IPV victimization has been associated with physical health problems ranging from injuries or conditions directly caused by physical assault to musculoskeletal and cardiovascular problems (Cantos, Neidig, & O'Leary, 1994; Gerlock, 1999). Psychological and emotional distress has also been associated with IPV among partners of combat veterans with PTSD (e.g., Street, King, King, & Riggs, 2003). Research also shows higher levels of child abuse in military families in which IPV occurs (Rumm, Cummings, Krauss, Bell, & Rivara, 2000). A large non-military research base indicates that the children who witness IPV also suffer from a variety of emotional and social problems (Kitzmann, Gaylord, Holt, & Kenny, 2003; Margolin, 1998) and have a higher propensity to engage in violent behavior in their own adult relationships (Dutton, Van Ginkel, & Starzomski, 1995; Ehrensaft et al., 2003). IPV also results in substantial costs related to health care, criminal justice interventions, education, child and social services, housing, and lost worker productivity (Ellsberg, Jansen, Heise, Watts, & Garcia-Moreno, 2008; Max, Rice, Finkelstein, Bardwell, & Leadbetter, 2004; Rivara et al., 2007).

In addition to direct impacts on relationship partners and family members, IPV also results in significant negative consequences for the military service member. IPV alienates service members from family members and negatively impacts social support networks. Poor family functioning in military populations has been strongly associated with mental and physical health problems, increased use of medical and psychiatric services, and lost workdays (Gal, 1986; Kelley et al., 2002; Segal, Rohall, Jones, & Manos, 1999; Snyder, 1978; Vinokur, Pierce, & Buck, 1999). Further, among active military, family problems are more powerful predictors of military morale, motivation, readiness, and retention than resource variables, unit-related factors, and work conditions (Pierce, 1998; Schumm, Bell, & Resnick, 2001; Segal et al., 1999). Military servicemen experiencing intimate relationship problems are also more likely to exhibit concentration problems and deficits in cognitive acuity that may compromise mission safety and job performance (Raschmann, Patterson, & Schofield, 1990).

Evidence suggests that it is not deployment or exposure to warzone stressors alone that places military populations at risk for IPV. Rather, the primary determinant of whether one is at heightened risk for IPV following deployment appears to be the development of trauma-related psychopathology (Jordan et al., 1992; Orcutt, King & King, 2003; Riggs, Byrne, Weathers, & Litz, 1998). In other words, military service members do not appear to be generally more violent than their civilian counterparts

in the absence of significant stress and/or posttraumatic stress disorder (PTSD) (Bradley, 2007). In fact, one investigation of Vietnam veterans reported that when statistically accounting for the effects of PTSD symptoms and other factors in a structural equation modeling analysis, higher combat exposure was associated with less IPV perpetration (Orcutt et al., 2003). Thus, it is particularly important to understand the link between PTSD and IPV in order to track the etiology of aggressive behavior in relationships, and, ultimately, to develop efficacious interventions to prevent and treat IPV in this population. Thus, the focus of this chapter is on the link between PTSD and IPV in military populations. We begin with a review of research findings documenting the relationship between PTSD symptomatology and IPV perpetration. This will be followed by material focusing on information processing models and mechanisms that may explain the link between PTSD and IPV, as well as moderators of this association. We will then discuss strategies to prevent and treat IPV in Active Component service members and veterans with PTSD, illustrated by two programs currently in development in our own research lab. We conclude with a summary of the research literature on the topic and recommendations for future work.

Our primary focus is on male-perpetrated IPV due to the dearth of research in the area of female-perpetrated IPV among the population of interest, though preliminary evidence suggests that PTSD symptoms may be associated with at least some forms of IPV in women veterans (Gold, Keehn, King, King, & Samper, 2007). For the purposes of this review, IPV is defined as aggression committed by a spouse, ex-spouse, or current or former intimate partner. Where appropriate, we will distinguish between physical and psychological IPV. Although definitions vary across studies, physical IPV refers to acts of aggression directed towards the target's bodily integrity. Psychological aggression can be defined as "coercive or aversive acts intended to produce emotional harm or threat of harm" (Murphy & Cascardi, 1999, p. 202). Other forms of IPV, including sexual coercion and stalking, are not included in this review due to the lack of research on these forms of aggression perpetration in military samples. Given inherent differences between Active Component military service members and veterans, this review distinguishes between these two groups when possible. The term "Active Component military service member" refers to those who are on active duty in the United States military or in the National Guard or Reserves, and the term "veterans" refers to men who have served and been separated from any branch of the armed forces.

PTSD and Intimate Partner Violence

PTSD is classified as an anxiety disorder that results from exposure to one or more traumatic events that pose actual or threatened death or injury and the experience produces intense fear, helplessness, or horror (DSM-IV-TR; American Psychiatric Association, 2000). The disorder involves persistent reexperiencing of the traumatic event(s), avoidance of trauma-related stimuli and emotional numbing symptoms, and persistent symptoms of increased arousal. PTSD is often

debilitating, leading to significant social and occupational impairment. PTSD also tends to be highly comorbid with a number of other psychiatric problems (Kessler, Sonnega, Bromet, Hughes, & Nelson, 1995; Kulka et al., 1990), and has been associated with poorer physical health and disability in both veteran and civilian samples (Boscarino, 2006; Schnurr & Green, 2004).

Hoge and colleagues (2004) documented substantial trauma exposure and PTSD symptomatology among returning veterans deployed to Iraq and Afghanistan in support of OEF/OIF. Participants reported significantly higher levels of PTSD following a deployment to Iraq than those who reported on their PTSD prior to an Iraq deployment. Specifically, the rate of likely PTSD among Army personnel returning from Iraq was 12.9%, and the rate of likely PTSD among a Marine Corps subsample returning from Iraq was 12.2%. These rates were substantially higher than the 5% rate of likely PTSD among another subgroup of Army personnel, reported prior to their Iraq deployment.

Although the examination of the relationship between PTSD and IPV is scant in Active Component military samples, male veterans diagnosed with PTSD have consistently been shown to be more likely to perpetrate physical and psychological IPV than veterans without PTSD (Glenn et al., 2002; Jordan et al., 1992). For example, in the nationally representative National Vietnam Veterans Readjustment Study (Kulka et al., 1990), approximately one-third of male veterans with PTSD were identified as partner violent during the previous year. This rate was two-to-three times higher than men without PTSD (Jordan et al., 1992).

In addition to the demonstration of group differences between those with and without diagnosed PTSD on IPV, positive associations have repeatedly been found between PTSD symptom severity and physical and psychological IPV severity (Byrne & Riggs, 1996; Glenn et al., 2002; Taft, Street, Marshall, Dowdall, & Riggs, 2007). A recent meta-analysis of empirical examinations of the relationship between PTSD symptomatology and intimate partner relationship measures indicated overall medium-sized true score associations (r) of 0.36 between PTSD and physical IPV perpetration and 0.38 between PTSD and psychological IPV perpetration (Taft et al., in press). PTSD symptomatology has also been shown to account for the influence of trauma variables on IPV perpetration, and strongly predicts IPV even while controlling for a range of other factors, such as early life stressors, personality disorder features, and war-zone exposure variables (e.g., Orcutt et al., 2003). Among the PTSD symptom clusters, symptoms reflecting hyperarousal are a particularly strong predictor of physical and psychological IPV (Savarese, Suvak, King, & King, 2001) and general aggression (Taft et al., 2007).

The Role of Social Information Processing in IPV

Social information processing models have been used by researchers to assist in explaining the etiology of IPV. McFall (1982) developed an influential social information processing model that held that one must trace the progress of information

from stimuli to responses, with a framework of sequential stages through which social stimuli are transformed into behaviors. The first stage is the decoding stage, which involves the reception, perception, and interpretation of incoming stimuli. Difficulties at this stage may be caused by inattention or distraction, as well as misinterpretation of social information. The second stage, decision-making, involves a series of skills involved in generating possible responses, matching the possible responses to the task demands, choosing the best response, determining if the individual is able to carry out that response, and then weighing the costs and benefits of putting that response into action. The final major stage, the enactment stage, involves translating the selected response into action, and monitoring the impact of the action. At each stage, other "transitory factors" such as substance use and anger can also negatively impact information processing.

According to Holtzworth-Munroe's (1992) application of McFall's (1982) model to IPV, social skills and information processing deficits are likely to interfere with the ability of partner-violent men to respond to social stimuli in an appropriate and effective manner. In her research, Holtzworth-Munroe has demonstrated social problem solving deficits among partner violent men relative to nonviolent controls (Anglin & Holtzworth-Munroe, 1997; Holtzworth-Munroe & Anglin, 1991). Eckhardt and his colleagues have similarly demonstrated that partner-violent men are more likely than nonviolent men to display a higher level of irrational beliefs and cognitive biases when angry (Eckhardt, Barbour, & Davison, 1998; Eckhardt & Jamison, 2002; Eckhardt & Kassinove, 1998).

PTSD has been linked with potentially problematic information processing variables, such as a heightened perception of threat in ambiguous situations and a negative interpretative bias (Constans, 2005). Previous researchers have highlighted information processing mechanisms whereby PTSD may lead to aggressive behavior. Specifically, Chemtob and his colleagues (Chemtob, Novaco, Hamada, & Gross, 1997a; Chemtob, Novaco, Hamada, Gross, Smith, 1997b; see also Novaco & Chemtob, 1998), in their conceptualization of problems with aggression among combat veterans with PTSD, emphasize the role of the context-inappropriate activation of cognitive processes related to a "survival mode" of functioning. They posit that those with PTSD, by virtue of their prior experience of trauma and life threat, are more likely to perceive threats in their environment, even in the absence of realistic threat. In response to these perceived threats, the individual exhibits heightened arousal and several cognitive biases associated with heightened anger and aggression, including a hostile appraisal of events, an inclination toward threat confirmation, increased vigilance in recognizing a threat, and a lower threshold for responding to the threat. These processes are preemptive of other adaptive cognitive processing once the individual enters into survival mode, due to the primacy of dealing with a perceived life threat. These processes negatively impact on the ability to regulate arousal and engage in self-monitoring behaviors or other inhibitory processes.

Consistent with Chemtob's model, one would expect that the PTSD hyperarousal symptom cluster, characterized by heightened physiological reactivity and difficulties with anger, drives the association between PTSD and IPV due to its impact on social information processing. In our own research, we have obtained a

number of findings in samples of veterans highlighting the role of hyperarousal symptoms and information processing mechanisms that may help explain the etiology of IPV in military populations. For example, we obtained findings among a sample of combat veterans that support the notion that anger serves as a mechanism for the relationship between PTSD and IPV (Taft et al., 2007). Compared with PTSD-negative participants, PTSD-positive participants reported higher state anger at baseline and upon laboratory exposure to trauma cues, and greater increases in anger upon trauma cue exposure. Further, trait anger partially mediated the effects of PTSD symptoms on both physical and psychological IPV. In another recent study of a non-military community-based sample of 161 men, we obtained evidence that social information processing problems represent a pathway whereby early trauma and PTSD symptoms lead to IPV in adulthood (Taft et al., 2008). Specifically, using structural equation modeling analyses, it was found that the effects of inter-parental violence exposure and childhood rejection on physical and psychological IPV perpetration were primarily indirect through PTSD symptoms and social information processing deficits. In addition to these investigations, a current laboratory-based study to investigate components of social information processing and their links with PTSD and IPV in OEF/OIF veterans is ongoing.

The Role of Core Themes in IPV

Considering that trauma and PTSD have a profound effect on the way that an individual views the world, it stands to reason that several core themes affected by trauma may have an impact on how one processes social information, and thus may underlie relationship functioning difficulties and IPV. Work by Resick and colleagues (Monson et al., 2006; Resick & Schnicke, 1992) in the context of the etiology and treatment of PTSD has identified several core themes that represent important treatment targets for PTSD, and that may be particularly important to address in IPV prevention interventions as well. In this chapter we will cover the themes of trust, self- and other-esteem, and power and control.

Trust in others is often disrupted following trauma. A trauma may have been caused by someone who was supposed to be trustworthy. In other cases a trauma may occur because other people made poor decisions or mistakes. One example is a combat trauma where a fellow unit member made an unwise or risky decision. Active duty service member and veterans with PTSD symptoms may feel like they cannot trust anyone, or that all people are out to hurt or betray them. Sometimes feelings of mistrust and betrayal can carry over into relationships, and controlling behavior and IPV may be the result.

Active duty service member and veterans who have experienced trauma and PTSD often harshly judge themselves whenever they make a mistake, or they unfairly blame themselves for what happened to them. Low self-esteem can lead to depression, insecurity in relationships, and IPV. Trauma and PTSD can also influence views of other people, or “other-esteem.” Traumatic events involving other people

may lead one to believe that others are not good or not to be respected. They may have generalized this belief to everyone (even those who do not deserve it), which may lead to problems with anger, withdrawal from social relationships, and IPV.

Clinicians and researchers have long asserted that men's violence toward women is influenced by beliefs related to power in relationships (e.g., Pence & Paymar, 1993). As argued by Rosenbaum and Leisring (2003), childhood exposure to violence and trauma among abusive men is likely to contribute to a sense of powerlessness. For example, a child exposed to interparental violence may have experienced a profound sense of helplessness at not being able to assist or protect the abused parent. Other forms of trauma, such as military-related trauma, are likely to similarly lead to a sense of powerlessness. Seminal conceptualizations of trauma reactions and PTSD have emphasized the importance of powerlessness (e.g., Finkelhor & Browne, 1985), and measures assessing this construct are strongly associated with distress and maladaptive social relationships (Kallstrom-Fuqua, Weston, & Marshall, 2004). Importantly, feelings of powerlessness are likely to contribute to conflicts regarding power in adult relationships, and such conflicts predict IPV perpetration (Schwartz, Waldo, & Daniel, 2005).

Murphy and Eckhardt (2005) describe several other core themes and assumptions that are common among traumatized abuse perpetrators. For example, exposure to prior violence may instill the belief that aggression is an appropriate means to resolving interpersonal conflicts. As these authors describe, a "belief in a just world" (i.e., the notion that people get what they deserve) is often used as a rationalization for abuse, and may stem from the assimilation of their own traumatic exposure as justifiable. Linked to this rationalization is the belief that aggression is morally correct and effective. Several other dysfunctional core beliefs may result from trauma and lead to a higher propensity for abuse, such as the beliefs that "I am the victim here." These are all rationalizations for abuse that are typically confronted in IPV interventions, though such interventions do not typically target the roots of these maladaptive cognitions, and thus are likely to be relatively ineffective.

Moderators of the Association Between PTSD and IPV

In addition to possible mediator variables explaining the association between PTSD and IPV, other factors that tend to co-occur with PTSD may impact upon the PTSD-IPV association. In the following subsections, we discuss the possible moderating role of depression, alcohol use problems, and traumatic brain injury (TBI).

Depression. PTSD is highly comorbid with depressive symptomatology across a range of trauma groups (Orsillo et al., 1996; Stein & Kennedy, 2001). Approximately one-third to two-thirds of veterans with PTSD have lifetime rates of major depression (see Erickson, Wolfe, King, King, & Sharkansky, 2001). Depressive symptomatology has been associated with both general aggression and IPV in military samples (Pan, Neidig, & O'Leary, 1994; Sherman, Sautter, Jackson, Lyons, & Han, 2006; Taft, Vogt, Marshall, Panuzio, & Niles, 2007). Aggression

theory, particularly the work of Berkowitz (1994), emphasizes the role of dysphoric affect. Berkowitz' cognitive-neoassociationistic model holds that dysphoric affect is connected with anger-related feelings, thoughts, memories, and aggressive inclinations in associative networks. Therefore, those who experience more frequent and severe depressive symptoms also experience heightened feelings, thoughts, and memories related to anger, and have a higher propensity for aggression.

Some work among samples of male military veterans suggests that comorbid depression may moderate the impact of PTSD on IPV. A study by Taft et al. (2005) compared partner violent Vietnam veterans with PTSD to nonviolent veterans with PTSD. As compared with the nonviolent veterans, partner violent veterans had significantly higher rates of major depression, suggesting that comorbid depression may amplify the effects of PTSD on IPV. Similarly, O'Donnell, Cook, Thompson, Riley, and Neria (2006), in a community sample of World War II former prisoners of war, found that depression moderated the relationship between PTSD and both verbal and physical IPV, such that the combination of PTSD and depression was associated with higher IPV risk than either of the disorders alone.

Alcohol use problems. Results of a population-based, longitudinal study of mental health problems of OIF service members conducted by Milliken, Auchterlonie, and Hoge (2007) showed that 11.8% of Active Component service members and 15% of Reserve Component personnel reported alcohol misuse at an assessment three to 6 months after returning from deployment. Among men, alcohol abuse or dependence is the most highly comorbid psychiatric problem with PTSD in representative community (Kessler et al., 1995) and veteran samples (Kulka et al., 1990). In the original NVVRS (Kulka et al., 1990), 75% of male veterans with PTSD met lifetime criteria for alcohol abuse, and 22% met criteria for current alcohol abuse. Moreover, research among veterans indicates that PTSD symptomatology is strongly linked to binge drinking in particular, suggesting that dangerous drinking patterns may be evident even in the absence of habitual drinking (Adams, Boscarino, & Galea, 2006; Hyer, Leach, Boudewyns, & Davis, 1991). Evidence supports the notion that the development of PTSD symptoms typically precede alcohol problems rather than the converse (Back, Jackson, Sonne, & Brady, 2005; Jacobsen, Southwick, & Kosten, 2001; Stewart & Conrod, 2003). The self-medication hypothesis is often used to explain this relationship, whereby alcohol is used to reduce the distress and anxiety that accompany symptoms of PTSD, and this behavior is maintained by the negative reinforcement from symptom relief (Brown & Wolfe, 1994).

Problematic alcohol use has been consistently implicated as a risk factor for IPV across a range of civilian (e.g., Murphy, O'Farrell, Fals-Stewart, & Feehan, 2001) and veteran samples (e.g., Savarese et al., 2001). Proximal effects models of aggression (Giancola, 2000) hold that alcohol use leads to aggression in part through its impact on executive functioning, consistent with the Chemtob (Chemtob et al., 1997a, 1997b; Novaco & Chemtob, 1998) model. Thus, it stands to reason that among those at relatively higher risk for aggression and cognitive deficits, such as Active Component service members and veterans with significant PTSD symptoms, alcohol use may have a disinhibiting effect with respect to IPV. Some evidence suggests that alcohol use disinhibits IPV among those possessing high levels of anger (Eckhardt, 2007).

With respect to samples of veterans, Savarese et al. (2001) examined the relationship between PTSD hyperarousal symptoms, alcohol use, and IPV in a subsample of those participating in the NVVRS. These researchers found that drinking quantity was a stronger predictor of both physical and psychological IPV than drinking frequency. In addition, some interactive effects were obtained such that the effects of hyperarousal on physical IPV were exacerbated by increased alcohol consumption. Interestingly, other tests of interactions suggested that high frequency of drinking in combination with low quantities of consumption may actually mitigate the impact of hyperarousal on physical IPV.

Traumatic brain injury. Traumatic brain injury (TBI) is an important consideration in IPV among OEF/OIF veterans. Approximately 15% of U.S. Army infantry OIF soldiers report an injury leading to loss of consciousness or altered mental state (Hoge et al, 2008) and 19% of OEF/OIF service member report possible TBI during their deployment (Tanielian & Jaycox, 2008). Approximately 44% of OIF service members who experience loss of consciousness from a head injury event suffer from PTSD (Hoge et al., 2008). Rates of TBI among IPV perpetrators range from 40 to 61%, and are significantly higher than those found in the general population (Rosenbaum & Hoge, 1989; Rosenbaum et al., 1994). TBI has consistently been linked to the perpetration of IPV (Cohen, Rosenbaum, Kane, Warnken, & Benjamin, 1999; Cohen et al., 2003; Knight & Taft, 2004; Marsh & Martinovich, 2006). Given models for aggression that highlight the role of executive function capabilities such as response inhibition, self-regulation, self-awareness, and intentionality (Chemtob et al., 1997b; Holtzworth-Munroe, 1992), it is not surprising that much attention has been paid to the prefrontal cortex as a critical substrate for aggression (Siever, 2008). Damage to the prefrontal cortex can result in executive function deficits with a range of functional manifestations such as personality changes, behavioral disinhibition, increased impulsivity, and lability (Chambers et al., 2007), all of which can impact the likelihood of IPV. Head injured men report significantly more loss of temper and control, increased difficulty communicating, increased arguing and yelling, and more relationship problems compared with controls (Warnken, Rosenbaum, Fletcher, Hoge & Adelman, 1994).

No previous published study has examined how TBI or executive functioning deficits may moderate the impacts of PTSD on IPV perpetration. It has been argued, though that among veterans who suffer from PTSD symptomatology, anger difficulties, and/or maladaptive cognitive processes, the experience of a TBI and executive functioning impairments can lead to severe difficulties with inhibiting behavior, regulating emotional reactivity, and controlling aggressive inclinations (Knight & Taft, 2004).

IPV Interventions

Intervention programs for men who engage in IPV are a relatively new phenomenon. The proliferation of these programs began in the late 1970s due to a rise in public awareness regarding domestic abuse and mandatory arrest policies for partner violence

incidents (Scott & Wolfe, 2000). Interventions for IPV are typically conducted in the group format, with intervention durations lasting from 12 to 52 weeks. Interventions differ with respect to theoretical orientation, though most can be classified as either cognitive-behavioral or feminist-psychoeducational (Babcock, Green, & Robie, 2004). Cognitive-behavioral interventions view IPV as a learned behavior and stress its functional aspects. These interventions generally involve psychoeducation, self-monitoring, cognitive restructuring, crisis management techniques (e.g., time outs, relaxation training), and skills training (e.g., communication, assertiveness) (Murphy & Eckhardt, 2005). Feminist psychoeducational interventions view IPV as rooted in patriarchal ideology and the social sanctioning of men's dominance over women. Interventions based on this model involve attempts at resocialization with respect to the individual's views on gender and power (Pence & Paymar, 1993).

In a meta-analysis of the efficacy of IPV interventions for violent men, Babcock et al. (2004) found that these programs yielded only modest effects. Specifically, it was shown that those receiving active IPV interventions averaged a reduction in recidivism of only 5% relative to untreated groups. Other research has shown no significant differences in efficacy among theoretically and technically distinct interventions for IPV (Morrel, Elliott, Murphy, & Taft, 2003; O'Leary, Heyman, & Neidig, 1999; Saunders, 1996), suggesting that we do not yet know the potential mechanisms responsible for positive change in these interventions.

Unfortunately, there is currently no empirically validated IPV intervention for military service members or veterans. Only one experimentally controlled evaluation of IPV intervention effectiveness has been conducted in a military setting. Among a large sample of married U.S. Navy couples in which the husband perpetrated IPV, Dunford (2000) found that none of the randomly assigned year-long intervention modalities (i.e., a cognitive-behavioral men's group, a cognitive-behavioral couples group, and a rigorously monitored group) were effective in reducing IPV at 6 and 12 months post-intervention compared with a no-intervention control group. It is important to note that none of the interventions used in this study incorporated components that dealt with prior trauma or PTSD. Dunford's (2000) findings suggest that as in the broader IPV intervention field, program modification efforts are needed to meet the needs of families of veterans that experience IPV.

One major barrier to IPV treatment in general may be the extensive trauma experienced by this population (Dutton, 1998; Murphy & Eckhardt, 2005). Trauma and trauma-related symptomatology have been found to be robust predictors of IPV treatment non-compliance (Chang & Saunders, 2002; Gerlock, 2001). Results from a controlled trial for IPV perpetrators conducted by Saunders (1996) similarly suggests the importance of addressing trauma and PTSD in enhancing compliance among this population. Specifically, this researcher examined an intervention that, during the first several sessions of group, involved drafting autobiographies focusing on traumatic childhood experiences, as well as structured group exercises and unstructured discussions addressing common results of trauma. This intervention was associated with higher treatment compliance than a standard group feminist cognitive-behavioral intervention, as evidenced by significantly lower dropout rates. Considering that combat veterans are at particularly high risk for PTSD,

and PTSD is linked to IPV and can hinder its treatment, the efficacy of IPV interventions may be improved if trauma-related sequelae are addressed.

The limited efficacy for standard interventions for perpetrators of IPV also highlights a need for alternative approaches used to target this problem. Prevention programs focused on improving intimate relationships and reducing the risk of onset of IPV are particularly indicated, given that relationship conflict typically serves as a precursor to relationship violence (Cascardi & Vivian, 1995) and more subtle forms of relationship aggression early in relationships are predictive of later violence (Murphy & O'Leary, 1989; O'Leary, Malone, & Tyree, 1994). Although no prevention programs for IPV among military populations have been empirically evaluated, some preliminary evidence from civilian samples suggests the potential benefit of preventive interventions (Markman, Renick, Floyd, Stanley, & Clements, 1993), particularly those that make use of cognitive-behavioral skills-based techniques (see O'Leary, Woodin, & Fritz, 2006).

We are currently developing and testing a prevention intervention through a funded collaborative agreement with the Centers for Disease Control and Prevention aimed at decreasing the incidence of IPV perpetration in OEF/OIF veterans. Strength at Home-Couples is a 10-week program conducted in a multi-couple format. The couples include a male OEF/OIF combat veteran, and the couples have no history of physical IPV. The program targets the social information mechanisms described in this chapter, with a focus on the unique stressors of deployment separation and combat exposure.

The initial phase of Strength at Home-Couples (Sessions 1–3) focuses on psychoeducation about trauma and relationship issues, and the second phase (Sessions 4 and 5) focuses on conflict management skills to assist couples in identifying and effectively managing difficult issues when they arise. During the third phase (Sessions 6–9), basic communication skills are covered, and Session 10, the final session, focuses on gains achieved over the course of the intervention and plans for continued change. Across all of the sessions, group members complete in-session practice exercises and are provided "practice assignments" to consolidate material covered in group. Assignments also involve intimacy-enhancing exercises (e.g., self-monitoring of positive relationship behaviors) across sessions.

A treatment program is also under simultaneous evaluation by our research team, funded by the Department of Veterans Affairs and Department of Defense. Strength at Home-Men's Group consists of twelve 2-h weekly sessions, co-led by a male and female co-therapist team. This program serves groups of 6–10 OEF/OIF combat veterans who have perpetrated physical IPV within the past 12 months. It incorporates many of the features noted above including understanding the impact of trauma on relationships, anger and conflict management, and enhancing social problem solving and communication skills. This intervention also makes use of in-session and out-of-session practice of material covered in group. Relative to the couples primary IPV prevention group, more attention is paid to anger dysregulation, with additional psychoeducation regarding the anger response, self-monitoring of anger during conflict situations, identifying and correcting automatic thoughts associated with anger, developing more realistic appraisals of threat, and developing a better understanding of one's learned style of communicating anger and other

emotions. Additional material also emphasizes coping with stress and learning strategies to reduce physiological arousal and reactivity. The program emphasizes taking personal responsibility for IPV, enhancing motivation for behavior change, and creating and fostering a positive therapeutic alliance.

We have secertly completed the pilot phase for both of these programs. Repeatedly, participants have commented on the importance of discussing their concerns with other members of the military and other military couples, particularly others who have experienced an OEF/OIF deployment. Participating in the couples group has served to increase couples' willingness to acknowledge and address their difficulties. In the pilot groups, group members have played a pivotal role in both challenging each other and supporting each other's efforts for change. Understanding trauma and the role that it can play in relationship problems and IPV has provided a framework for veterans to understand their difficulties. Facing these struggles alongside peers appears to be a powerful forum for reducing stigma and increasing hopefulness about the possibility of change.

Conclusions

IPV is a serious public health problem, and evidence suggests that military personnel who have trauma-related psychopathology are at heightened risk for the perpetration of such aggression. Considering increasing deployments and redeployments experienced by our current military, and the increasing likelihood that those deployed will experience significant trauma exposure, it is critical that we have a better understanding of how trauma exposure ultimately may lead to IPV. Research in this area is still in its relative infancy. While this review highlights what we know about some of the social information processing mechanisms and core themes that may account for how PTSD may lead to IPV, and some factors that may impact upon the PTSD-IPV relationship (depression, alcohol use problems, TBI), there is much more that we do not yet know about this association. Most notably, researchers have yet to begin to examine the complex interplay across all of these mediator and moderator variables and IPV outcomes. The complexity of PTSD and the phenomena of IPV necessitates that we make use of laboratory-based techniques, multi-modal assessment strategies, and longitudinal approaches to better capture this relationship.

There are numerous other factors that were not covered in this review and have not yet been extensively studied with respect to IPV among traumatized military populations. For example, the role of personality and biological factors represent important factors in etiological models for IPV and general aggression (Holtzworth-Munroe, Meehan, Herron, Rehman, & Stuart, 2000; Siever, 2008), and have been well studied in general PTSD research (Miller, Kaloupek, Dillon & Keane, 2004; Yehuda, 2006), though they have yet to be incorporated into models explaining the link between PTSD and IPV. We also have a very limited understanding of IPV

perpetration among servicewomen and female veterans, and of the complex dynamics involved in mutually versus unidirectionally aggressive couples (Teten, Sherman, & Han, 2009).

The importance of basic research aimed at understanding the PTSD-IPV link is highlighted by the lack of efficacious interventions that have been developed for military populations. Although a lack of demonstrated efficacy for such interventions mirrors the broader IPV field, and may be partially explained by a lack of controlled trials conducted in this area (and a number of ethical and other difficulties inherent in conducting such trials), research elucidating the processes whereby PTSD leads to IPV are essential for intervention efforts. Future work may also address basic intervention questions. For example, is it more effective to focus on treating the PTSD itself rather than the mechanisms whereby PTSD leads to IPV? Is it possible to prevent IPV perpetration among this at-risk population via use of primary prevention programs focused on relationship enhancement? And, how should IPV interventions be tailored to take into account the influence of moderator variables such as those described in this review? Efforts to answer such questions will not only lead to reductions in IPV and strengthened military families, but will ultimately inform basic and treatment research aimed at reducing IPV more generally in our culture.

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Chapter 11
Couples' Psychosocial Adaptation to Combat Wounds and Injuries

Hoda Badr, Trina M. Barker, and Kathrin Milbury

Abstract Almost half of all service members are married at the time of their deployment, and spouses play a key role in their rehabilitation after being wounded in combat. This chapter reviews the literature on couples' psychosocial adaptation to combat wounds and injuries and is divided into three parts. First, we review studies on the impact of physical and psychological wounds on service members' spousal relationships. Next, given the relative paucity of research in this area, we review the major theoretical frameworks that have guided an understanding of how spousal relationships promote adaptation to health-related stress in the civilian population and discuss how these frameworks can be used to help military couples cope with the unique challenges and implications of combat wounds and injuries. Finally, we discuss some of the challenges of doing research in this area and propose directions for future research.

Between October 2001 and November 2009, 1.9 million U.S. troops completed almost 3 million deployments for Operations Enduring Freedom and Iraqi Freedom (OEF/OIF). Although the U.S. Central Command confirmed in 2008 that over 5,000 service members have died in these campaigns as part of the global war on terror, it is difficult to quantify the number who have been wounded or injured. Estimates vary widely from 35,000 (O'Hanlon & Campbell, 2007) to 53,000 or more (Marchione, 2007).

Military personnel in Iraq and Afghanistan are surviving their physical injuries in numbers far greater than previous wars (Gawande, 2004). This is largely due to advances in body armor, combat medicine, and the rapidity of evacuation. Despite this, wounded OEF/OIF veterans commonly experience traumatic brain injury (TBI), blindness, spinal cord injuries, burns, and damage to their limbs resulting in

H. Badr (✉)
Department of Oncological Sciences, Unit 1130, Mount Sinai School of Medicine,
One Gustave L. Levy Place, New York, NY 10029, USA
e-mail: hoda.badr@mssm.edu

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amputation. These physical injuries require sophisticated, comprehensive, and often lifelong care. They also exact a psychological toll. Indeed, the unique nature of the current conflicts, which include multiple and lengthy deployments, urban warfare, and roadside bombs, places special burden on military service members. Psychological injuries are often not included in estimates of the number wounded; but one-third of all the veterans of OIF/OEF are expected to experience serious psychological disorders (i.e., mood disorders, anxiety disorders, and/or adjustment disorders) within 3–4 months of returning from deployment (Seal, Bertenthan, Miner, Saunak, & Marmar, 2007). Many must thus cope with both physical and psychological injuries.

The physical and emotional scars of war have practical and emotional repercussions for not only the wounded but also for their families. Family members often provide practical assistance by accompanying veterans to their clinic appointments and hospital stays, assisting with household responsibilities, interacting with health care providers, and offering input with important medical decisions. They are also important providers of medical care. More importantly, throughout the treatment and rehabilitation process, family members are crucial providers of emotional and practical support.

It is estimated that about 50% of OIF/OEF service members are married at the time of deployment. Because marriage is a primary relationship in adulthood, affords a central role identity, and provides a fundamental source of social support, much research has focused on the associations between relationship quality, relationship processes, and physical and mental health in the context of marriage (Lyons, Sullivan, Ritvo, & Coyne, 1995). For example, among couples coping with chronic health-related stress, higher levels of marital satisfaction have been shown to buffer the effects of patients' physical impairment on their partners' distress (Fang, Manne, & Pape, 2001) and the effects of one person's distress on that of the other (Carmack Taylor et al., 2008). Greater marital satisfaction has also been related to decreases in patient distress (Ptacek, Ptacek, & Dodge, 1994). With regard to social support, patients report better emotional adjustment after an illness diagnosis if their partners are highly supportive (Kayser & Sormanti, 2002; Manne et al., 2004b; Northouse, Templin, & Mood, 2001), and support from family members and friends does not appear to compensate for a lack of intimate partner support (Pistrang & Barker, 1995).

Due to the central role that they play, this chapter will focus on the role of intimate partners in the psychosocial adaptation of wounded service members. We divide our chapter into three parts. First, we will review the existing literature on the impact of physical and psychological wounds on the spousal relationships of military personnel. Given the relative paucity of research on this subject, we will next review some of the major theoretical frameworks that have guided an understanding of the role of relationship processes in couples' psychosocial adaptation to health-related stress in the civilian population, highlighting their potential utility for use with military populations along the way. Finally, we will discuss some of the challenges of doing research in this area and propose directions for future research.

Traditional Approaches to Understanding Combat Wounds and Injuries in the Marital Context

Traditional approaches to understanding the psychosocial impact of combat wounds and injuries have sought to describe the pain and distress experienced by injured veterans (Adler, Vaitkus, & Martin, 1996; Clark, Bair, Buckenmaier, Gironda, & Walker, 2007). Over the years, however, researchers and clinicians have begun to recognize the importance of viewing the veteran's health condition in the family context (Harris & Fisher, 1985; Williams, 1987). This realization has lead to studies assessing partners' distress levels (Alessi, Ray, Ray, & Stewart, 2001; Mikulincer, Florian, & Solomon, 1995; Rosenbaum & Najenson, 1976) and the psychological impact of caregiving (Calhoun, Beckham, & Bosworth, 2002). Studies show that the healthy partner is often the primary caretaker and assumes greater responsibility for household tasks (e.g., finances, time management, chores) and the maintenance of relationships (e.g., children, extended family) after the wounded service member returns home (Verbosky & Ryan, 1988). Caregiver burden includes the objective difficulties of this work (e.g., financial strain) as well as the subjective problems associated with caregiver demands (e.g., emotional strain) (Pearlin, Mullan, Semple, & Skaff, 1990). Not surprisingly, wives of wounded veterans often report higher levels of distress than wives of non-injured veterans; their experience of caregiver burden also tends to increase with the severity of their husbands' symptoms (Beckham, Lytle, & Feldman, 1996; Calhoun et al., 2002).

A second focus has been to evaluate the impact of combat injuries on the general quality of the marriage. Active component military personnel and reservists must often go on long deployments and this physical separation can induce marital stress (Galovski & Lyons, 2004), communication difficulties, and the loss of a sense of closeness and connection with their partners (Faber, Willerton, Clymer, MacDermid, & Weiss, 2008). Duck (1995) postulated that one of the key characteristics of close relationships is the regular, ongoing communication between partners that allows them to fuse different perspectives and create a shared sense of meaning. Thus, couples who are unable to connect and communicate regularly may be at greater risk for conflict and distress. Fortunately, this "disconnect" appears to dissipate for many couples as they are reunited and begin to reestablish old routines or create new ones (Faber et al., 2008).

When service members return home injured, there are two adjustments that the couple must make – one is to adjust to the physical and emotional sequelae of the injury itself and the other is to readjust to marital life following separation. Little is known about how couples negotiate this process or about the social, behavioral, and relationship factors that may increase or decrease the likelihood of making a successful adjustment in terms of psychological well-being and martial functioning. What we do know is that different injuries pose different challenges, and some may be more difficult for couples to cope with than others.

Traumatic Brain Injury (TBI)

The major cause of injury in OEF/OIF has been from blasts, especially from improvised explosive devices. According to the (carlock, 2007), explosive devices are responsible for 65% of the casualties resulting from these campaigns. Due to its prevalence, TBI has been called the "signature injury" of these wars (de Riesthal, 2009). TBI can cause attention, memory, and language problems as well as headaches, sleep disturbances, and personality changes. Whereas those with mild TBI usually recover within a year, those with moderate and severe TBI may never fully recover (Okie, 2005).

We are unaware of any published studies examining the impact of traumatic brain injuries incurred during OEF/OIF on marital functioning, per se. However, studies of the effects of TBIs from previous conflicts on couples' adjustment do exist. One study followed 123 TBI veterans after their injuries and found that 15% were divorced within the first year (Kersel, Marsh, Havill, & Sleigh, 2001). Some have postulated that couples may experience more difficulty maintaining satisfying relationships in the face of TBI compared to other conditions (Blais & Boisvert, 2005). Indeed, in addition to dealing with profound role changes in their relationships and the financial, physical, and emotional toll of caregiving, partners of TBI veterans must come to terms with the likelihood that their partners and their relationships may never return to normal. Compounding this stress, partners often lose their major source of emotional support and companionship, and experience decreases in parenting support, sexual intimacy, and open, empathic spousal communication. In a qualitative study, Rosenbaum and Najenson (1976) found that wives of Israeli soldiers reported high levels of distress and irritability over the loss of shared partnership with regard to household responsibilities and social activities and were distressed over the loss or decrease in sexual activity with their husbands. Other qualitative studies have suggested that wives of TBI veterans report feeling more like parents than spouses and experience distress over this loss of perceived equality in their relationships (Gosling & Oddy, 1995).

Couple-focused interventions that involve approaching the recovery process as a joint endeavor may help TBI veterans and their partners to better define and adjust to the "new normal" of their lives. Even though there are a number of psychosocial interventions reported in the heath needs to be a health psychology literature designed to alleviate distress and caregiver burden in the face of illness or injury, researchers need to critically evaluate whether these interventions can be effectively adapted and implemented with wounded veterans and their caretakers. Indeed, most studies that have examined coping with the loss of cognitive and physical functioning have been conducted with elderly populations. While it is true that TBI veterans experience numerous cognitive and physical challenges, they and their spousal caretakers are often much younger and unprepared for a future of coping with the ramifications of this type of enduring disability. Additionally, even though all chronic health conditions tend to be associated with a change in

social and functioning roles, changes may be even be more pronounced in young, wounded service members who are likely grieving the loss of their identity as healthy, fully functioning, independent members of society. Thus, before couple-focused interventions can be implemented in this population, researchers need to first identify the specific TBI-related stressors that adversely affect couples' marital and psychological adjustment. Given the cognitive and physical challenges faced by TBI veterans and the increased need for caregiving, researchers should also investigate the larger context of the family as a support system for both the patient and the spouse caregiver.

Post-Traumatic Stress Disorder

Post-traumatic stress disorder (PTSD) is a mental health condition commonly experienced by combat veterans, rape victims, and others who have endured a traumatic event. It is characterized by hypervigilance, avoidance, emotional numbing (the inability to feel love or happiness), as well as the reexperience of the traumatic event (Friedman, 2006). Among veterans, PTSD is associated with lower ratings of general health, more sick calls and missed workdays, and higher somatic complaints. Rates of PTSD symptoms among OIF/OEF veterans are as high as 16% (Hoge, Terhakopian, Castro, Messer, & Engel, 2007).

Partners of veterans with PTSD have a greater likelihood of developing mental health problems compared to the partners of veterans without PTSD (Solomon, Waysman, Avitzur, & Enoch, 1991). Many partners experience distress and other mental health problems that warrant clinical attention (Manguno-Mire et al., 2007). Some of these cases can be attributed to secondary traumatization (Mikulincer et al., 1995). Secondary traumatization refers to the indirect impact of trauma on those in close contact with the victim. Partners who experience mental health problems may thus be less able or equipped to provide adequate practical or emotional support to the injured veteran. Likewise, the distress of one or both partners can also increase the likelihood for distress in the couple. Factors contributing to marital distress include the healthy partner having difficulty coping with the veteran's condition, one or both partners feeling that their emotional needs are not being met, substance use, and the experience of physical and/or emotional abuse (Savarese, Suvak, King, & King, 2001). All of these are concerns for couples coping with PTSD (Galovski & Lyons, 2004; Nelson & Wright, 1996).

One of the strongest predictors of recovery following trauma in the wake of PTSD symptoms is social support. Talking to one's spouse, for instance, may facilitate successful processing of the traumatic event by allowing the disclosure of emotions, helping the individual to learn to tolerate aversive feelings, providing support for adaptive coping, and providing direct assistance in finding meaning and benefit in the experience. Conversely, not being able to talk about a traumatic experience because one's partner is perceived as critical, unreceptive, or uncomfortable with the topic may place individuals at higher risk for adverse psychological reactions

(Lepore, 2001). Supporting this idea, combat veterans who disclose their thoughts and experiences to supportive others, particularly spouses, show greater psychological adjustment (e.g., less anxiety and depressive symptoms) compared to those who keep their thoughts and feelings to themselves (Egendorf, Kaduschin, Laufer, Rothbart, & Sloan, 1981).

One reason why veterans may hold back from disclosing concerns is that they may feel that their partners will not understand or empathize with their experience. Many may thus prefer to disclose their deepest emotions to other veterans who have had similar experiences. Compounding the problem from a couples' perspective, individuals suffering from PTSD experience symptoms (i.e., emotional numbing, detachment, hostility, aggression, and a general distrust of others) that can result in emotional distancing and reduced social support from their partners (Orth & Wieland, 2006) and greater marital distress for both partners over time (Solomon et al., 1991).

Research reveals severe and pervasive negative effects of PTSD on the marital adjustment and general family functioning of combat veterans. Importantly, martial adjustment is a multidimensional construct, and studies have operationalized adjustment in terms of martial satisfaction, cohesion, consensus, and affectional expression as well as the absence of criticism, hostility and spousal aggression and violence. For example, in a study of Vietnam veterans, those with PTSD reported less verbal involvement, less self-disclosure, and less dyadic satisfaction, consensus, and cohesion compared to veterans without PTSD (Carroll, Rueger, Foy, & Donahoe, 1985). PTSD veterans also report higher levels of general hostility and physical aggression towards their partners (Carroll et al., 1985), more problems establishing and maintaining physical and emotional intimacy (Riggs, Byrne, Weathers, & Litz, 1998), and more sexual problems compared to those who do not have PTSD (Cosgrove et al., 2002). Decreased marital adjustment is an important concern, not only because it is related to lower levels of social support (Unger, Jacobs, & Cannon, 1996) and an increased risk for divorce (Spanier, 1989), but also because it is associated with compromised parenting, family violence, and caregiver burden in military families (Calhoun et al., 2002; Jordan et al., 1992; Kulka et al., 1990; Silverstein, 1996; Waysman, Mikulincer, Solomon, & Weisenberg, 1993).

PTSD symptoms like anger, irritability, and emotional numbing may account for the association between PTSD and relationship dissatisfaction. For example, veterans who experience emotional numbing may have difficulty achieving emotional intimacy or behaving in a loving manner toward their partners. Alternatively, relationship discord may facilitate the development or exacerbate the course of PTSD. Riggs et al. (1998) examined the connection between PTSD symptom clusters and relationship problems. They found that avoidance symptoms, specifically emotional numbing, interfere with intimacy (for which the expression of emotions is required), and contribute to problems in the relationship. Thus, a cycle of distress may exist whereby the lack of emotional intimacy and open communication in couples coping with PTSD may impede future self-disclosure and emotional expression. This in turn may lead to increased partner distress and

impede veteran's ability to emotionally process his or her traumatic experience, leading to the maintenance of PTSD symptoms.

Based on the patterns of PTSD symptoms and their well-documented association with marital dysfunction, effective treatment may require a dyadic component. Indeed, there is evidence that self-disclosure particularly to the veteran's spouse is associated with better psychosocial adjustment for the veteran (Egendorf et al., 1981). Moreover, even though the spousal relationship can prove a tremendous coping resource in times of stress and readjustment, the dissociative symptoms of PTSD can lead to social isolation, cutting off the veteran communicatively and emotionally from his or her spouse. A dyadic approach to treatment may facilitate effective communication, enhance intimacy, and help to address the secondary victimization of the spouse by enhancing mutual understanding and emotional validation. Before developing couples' interventions that focus on improving adaptive communication and cognitive processing in the wake of PTSD symptoms, it is important to determine how the veteran's disclosure of war-related trauma may affect or adversely affect his or her partner who may not have any combat or military experience.

Spinal Cord Injuries

Causes of spinal cord injuries (SCIs) during OIF/OEF range from gunshot wounds to explosive devices and vehicle accidents. Although normal cognitive function and intellectual ability usually remain, depending on the severity of the injury, SCI can produce not only an inability to move and feel limbs, but also the inability to control the function of internal organs and breathe independently (Cleveland Clinic, 2003). In addition to its physical consequences, the emotional consequences of living with SCI can be devastating. SCI veterans may experience impaired body image, self-esteem issues, and feelings of inadequacy. They may also develop more serious mental health conditions including substance use disorders, mood disorders such as depression and anxiety, and PTSD (North, 1999). While clinical lore suggests that depression and other mental health conditions are an inevitable consequence of SCI, there is no evidence to support this contention; however, it is estimated that about 30% of individuals with SCI will develop a mood disorder (North, 1999).

SCI can also be challenging from a couple's perspective. Although there are no real estimates of the divorce rate among SCI veterans, studies in the civilian population have yielded some interesting, albeit inconclusive results. Some studies suggest fewer marriages and a greater number of divorces following SCI compared to the general population (DeVivo & Fine, 1985); others suggest no difference (El Ghatit & Hanson, 1975). However, the divorce rate for women with SCI does appear higher than the rate for men (DeVivo & Fine, 1985).

The lack of a fulfilling sex life has been linked to psychological and marital distress (Althof, 2002; Couper et al., 2006; Cowan & Mills, 2004; Neese, Schover, Klein, Zippe, & Kupelian, 2003; Schwartz, Covino, Morgentaler, & DeWolf, 2000).

Although sexuality after SCI has received increased attention in recent years, there is as yet a sparse literature comparing the sexuality of persons with SCI to those in the general population. In one study, researchers examined whether the factors associated with marital adjustment among SCI and non-SCI couples were similar (Urey & Henggeler, 1987). They found that dissatisfied couples in both groups reported more negative communication patterns and were less satisfied with their sexual relationships. However, SCI husbands were less sensitive to their wives' sexual preferences and reported less pleasure from sexual relations. Distressed SCI couples also reported fewer shared activities. In another study, researchers found that even though sexual activity and satisfaction was lower among persons with SCI compared to healthy controls, the emotional quality of their relationships did not differ. The most important correlates of sexual fulfillment in both groups were the use of a varied repertoire of sexual behaviors (including the expression of nonsexual forms of intimacy such as kissing, hugging, and caressing one another) and the patient's perception that his or her partner enjoyed and was satisfied with their sex life (Kreuter, Sullivan, & Siösteen, 1996). Taken together, research on couples coping with sexual dysfunction in the face of SCI suggests that maintaining relationships by sharing activities and exploring other sexual and nonsexual ways of expressing intimacy may help to facilitate both partners' adaptation.

Amputations and Burns

Few studies exist on the impact of amputations and burns on couple's psychosocial adaptation. Protective gear worn in OEF/OIF has prevented many fatal abdominal and chest wounds but has shifted the pattern of injury to limbs, which are largely unprotected (Potter & Scoville, 2006). Psychological adjustment problems including anxiety, social isolation, decreased sexual activity, and depression are common among amputees (Akesode & lyang, 1981; Reinstein, Ashley, & Miller, 1978; Shukla, Sahu, Tripathi, & Gupta, 1982; Thompson & Haren, 1983). Rates of clinical depression in outpatient settings range from 23 to 35% (Kashani, Frank, Kashani, & Wonderlich, 1983; Rybarczyk et al., 1992), and women are more likely than men to experience depression following amputation (Kashani et al., 1983). High levels of perceived spousal support are associated with better adjustment following amputation (Rybarczyk et al., 1992); solicitous spouse responses (e.g., taking over chores or duties) are associated with poorer adjustment and increased levels of phantom limb pain (Jensen et al., 2002).

It is estimated that 5% of evacuations from OEF/OIF are due to burns as the primary source of injury (Kauvar et al., 2006). Of these, roughly half are due to explosive devices such as IEDs or car bombs. Because they are often unprotected, the hands and head are the most common burn sites. Although these burns are often small in size, they are difficult to treat and can lead to functional impairment (Kauvar et al., 2006). From an adjustment (e.g., depression, agitation, anger, distress) perspective, burns are particularly difficult to cope with because they

adversely affect appearance, making social integration difficult. In fact, some researchers have described burn injuries as continuous traumatic stressors because they induce physical and emotional challenges that begin with the traumatic nature of the injury itself, continue through patients' hospitalizations (which are often lengthy and repeated), and persist indefinitely after discharge (Gilboa, Friedman, & Tsur, 1994).

Most studies that have examined the impact of burn injuries on marital relationships have been in the civilian population and have focused almost exclusively on rates of divorce. Reports vary from no divorce after burn injuries (Andreasen & Norris, 1972) to rates of up to 26% (Chang & Herzog, 1976). Studies also suggest a decline in sexual satisfaction, especially among women, regardless of the size or location of the burn (Andreasen & Norris, 1972). Based on the paucity of research on amputations on burns on marital functioning, much research is needed to identify the primary obstacles to marital satisfaction and functioning. This information can then be used to guide programs that promote coping and successful adaption for both partners. For instance, if appearance related concerns are truly the primary stressors for couples with burn injuries, interventions may focus on using the marriage (e.g., spousal support and acceptance) to adjust to appearance changes and disfigurations and eventually reestablish positive body image.

Summary

The few studies that have examined psychosocial adjustment (e.g., depression, distress, aggression, PTSD symptoms, and substance abuse) following combat wounds and injuries have made strides in describing the experiences of veterans and in describing the impact of these injuries (albeit to a lesser degree) on their partners and relationships. While the above review is certainly not exhaustive, it does highlight the idea that, from a couples' perspective there are some commonalities across conditions. For example, wounded and injured persons often experience difficulty reconnecting and reestablishing intimacy with their partners, and couples who maintain their relationships by engaging in open communication, shared activities, and engage in sexual and nonsexual methods of expressing intimacy appear to have better martial adjustment such as satisfaction, cohesion, and stability over time.

Although traditional approaches have been informative, they often treat members of the couple as independent and fail to acknowledge that partners' distress levels are interdependent (Segrin et al., 2007). To move this field forward, we believe it is important to adopt a couple-level perspective whereby the veteran's condition is viewed in relational terms so that the dyad is the unit of analysis. Implicit in this perspective is that the physical and emotional injuries of war affect the couple, and that a focus on the veteran and his or her partner separately may not be as beneficial from a theoretical and clinical perspective as a focus on the relationship (Manne & Badr, 2008). Another important assumption is the

belief that the marital relationship is a resource for partners to draw on during difficult times, but that it is equally important to study the ongoing contributions that partners make to preserve and improve relationship quality. Thus, the veteran's injury can serve as an opportunity for couples to forge a more intimate bond.

Viewing the physical and emotional scars of war as a potential relationship opportunity as opposed to a challenge for individual partners entails a refocusing of scholarship and attention onto couples' interactions and how these interactions affect both partners' sense of closeness and adaptation to stressors and life changes. From this perspective, relationship processes, or the ties that bind patients and partners together as they cope together, are key (Manne & Badr, 2008). We believe that identifying and targeting key relationship processes (e.g., supportive communication) can facilitate the design of efficacious couple-focused interventions aimed at improving psychosocial adaptation. Because models of couples' adjustment to combat wounds and injuries currently do not exist, we will next review some of the major theoretical frameworks that have guided an understanding of the role of relationship processes in couples' psychosocial adaptation to health-related stress in the civilian population.

Couple-Level Models of Psychosocial Adaptation

Couple-level models for understanding adjustment to health-related stress include dyadic stress and coping models (Bodenmann, 1997, 2005) and relationship process models (Manne & Badr, 2008). Unlike traditional models, these models focus on both members of the couple and nature and frequency of their communication with each other.

Dyadic Stress and Coping Models

Because combat wounds and injuries affect both partners in a relationship, they are considered dyadic stressors. Dyadic stressors are common in everyday life but are challenging to study because they can affect people on both an individual and a couple level. At the individual level, each person's experience of the dyadic stressor is filtered by his or her own unique needs and concerns. Thus, veterans may be more concerned about the emotional, physical, and practical consequences of having a terminal illness; their partners may be preoccupied with caregiving and worry about how the veteran's condition will affect them. At the couple level, veterans and their partners must coordinate how they cope with illness-related stressors. This may include practical efforts (e.g., managing household responsibilities), and engaging in more emotionally laden coping tasks such as managing emotional reactions and reacting to one another's distress.

Although dyadic stressors affect both persons individually and collectively as a couple, most research on couples' coping has been guided by Lazarus and Folkman's (1984) transactional model of stress, the focus of which is largely on the sick or injured spouse. This model views social support as a form of coping assistance (Thoits, 1986) and conceptualizes one person (usually the healthy partner) as the support provider and the other (usually the patient, or, in this case, the wounded veteran) as the support recipient. Research emanating from this model has shown that even though the spousal relationship can be a tremendous coping resource, partners can sometimes be negative or unsupportive. Unsupportive partner behaviors such as hiding worries, criticizing the patient's coping efforts, avoiding discussions about the illness or injury, and providing unsolicited advice are of concern because they can reduce the patient's ability to cope effectively and exacerbate psychological and marital distress (Badr & Carmack Taylor, 2009; Manne, Dougherty, Veach, & Kless, 1999, Manne, Taylor, Dougherty, & Kerneny, 1997; Manne et al., 2003, 2007). Generally, this model does not take stressors that couples face together into consideration. Given this, developing a better understanding of the ways that wounded veterans and partners support each other and adaptively cope together may aid in the development of couple-focused interventions.

The Systemic-Transactional Model (STM) posits a model of dyadic coping in which, faced with a shared stressor, relational partners cope both individually and collectively as a unit (Bodenmann, 1997, 2005). At the individual level, stress appraisals are shaped by the individual's own unique needs and concerns. Based on these appraisals, a stress communication process is triggered whereby each partner communicates his or her own stress to the other in hopes of receiving support and coping feedback. The other partner can then respond in either a supportive or unsupportive fashion. Supportive coping responses include providing advice and practical help with daily tasks, showing empathy and concern, expressing solidarity, and helping one's partner to relax and engage in positive reframing. Unsupportive coping responses include showing disinterest, conveying a reluctance to provide support, providing support that is accompanied by criticism, distancing, or sarcasm, and minimizing the severity of the stressor. This coping is considered "dyadic" because both partners are involved; however, each person's involvement is confined to helping the other partner manage his or her own stress. STM thus describes responses at this level as supportive and unsupportive (dyadic) coping.

At the couple-level, relational well being is affected by the couple's ability to work together to manage aspects of the dyadic stressor that affect both of them. This coordinated effort has both positive and negative forms. Common positive dyadic coping involves joint problem solving and the coordination of everyday demands, mutual calming, mutual sharing, mutual expressions of solidarity, and relaxing together. Common negative dyadic coping involves mutual avoidance and withdrawal.

In sum, the STM involves multiple interactive components: (1) the degree to which both partners communicate their own stress (i.e., stress communication); (2) the degree to which both partners respond to each other's stress communications

(i.e., supportive or unsupportive coping); and (3) the degree to which both partners work together to manage dyadic stress and restore a sense of balance in their relationship (i.e., common positive or negative dyadic coping). Although we are unaware of published studies that have evaluated this model in wounded service members and their spouses, a recent meta-analysis of 13 studies of healthy civilian couples and couples in which one partner had a psychiatric diagnosis provided convincing evidence for the association between dyadic coping and marital functioning (d = 1.3; Bodenmann, 2005). Couples suffering from PTSD (Kramer, Ceschi, Van der Linden, & Bodenmann, 2005) appear to lack dyadic coping, and a study of community-dwelling adults found that couples who reported low levels of common positive dyadic coping at study entry were more likely to divorce or separate 5 years later (Bodenmann & Cina, 2000). Regarding physical health stressors, in a study of 191 couples coping with metastatic breast cancer, Badr and colleagues found that using more common positive dyadic coping strategies was associated with less distress for partners and was mutually beneficial for wives and partners in terms of greater dyadic adjustment over a 6-month assessment period. Taken together, these findings may be relevant to military couples coping with the psychological and physical wounds of OIF/OEF. Supporting this contention, studies have found that Vietnam veterans who suffered from PTSD had lower coping quality than veterans without PTSD – particularly in relationship dimensions such as consensus-finding and intimate-relationship cohesion (Carroll et al., 1985).

Relationship Process Models

Whereas communicating support to one's partner to reduce his or her distress and joint problem solving are important components of dyadic coping, relationship processes models (i.e., relationship resilience and intimacy process models) focus on communication processes in terms of how couples disclose concerns and communicate support as well as the ways in which they communicate to resolve stress.

Relationship resilience models. Marital resilience refers to the strategies partners engage in to strengthen and/or maintain the stability of their relationship and promote positive accommodation to challenges (Canary, Stafford, & Semic, 2002). Stafford and Canary (1991) identified five such strategies: (1) positivity, or interacting with one's partner in a cheerful and optimistic manner; (2) openness, which refers to discussing and disclosing information about the relationship with one's partner; (3) assurances, which are messages of commitment and love; (4) social networks, which entails relying on or interacting with common relatives/friends; and (5) shared tasks, which involves engaging in everyday activities such as housework together. These relationship maintenance strategies promote important relational characteristics (i.e., liking, commitment) that motivate people to engage in other pro-relationship behaviors over time (Canary et al., 2002)

and prevent the relationship from decaying (Dindia & Baxter, 1987; Guerrero, Eloy, & Wabnik, 1993).

Patterson (2002) has argued that understanding resilience depends on the identification of processes that potentially buffer the relationship between a family's exposure to risk and their ability to maintain competence and accomplish family functions. Because couples coping with war wounds must deal with the initial trauma of the injury and the daily challenges of living with the aftermath of the veteran's condition, understanding the strategies that allow couples to adapt and reachieve a sense of normalcy is important. No studies have examined the use of maintenance strategies among couples coping with combat injuries; however, Badr and colleagues prospectively examined their effects among couples coping with another health-related stressor – cancer. Specifically, 158 lung cancer patients and their spouses completed questionnaires within 1 month of treatment initiation (baseline) and 3 and 6 months later. Multilevel modeling with the couple as the unit of analysis showed that, regardless of gender or social role (i.e., whether the individual was a patient or spouse), individuals who engaged in the strategies of positivity, networks, and shared tasks reported less distress at baseline than other subjects. Over time, the effects of providing more assurances and experiencing a partner's increased reliance on social networks differed: patient distress was exacerbated, and spouse distress was alleviated. Couples where both partners engaged in more frequent maintenance behaviors reported greater dyadic adjustment at baseline and over time. The authors concluded that the initial treatment period may be an important time that sets the tone for future spousal interactions and that engaging in relationship maintenance during this period may help mold more resilient relationships and facilitate adjustment (e.g., decreased depression and distress) as the disease progresses. Given these findings, it may also be useful to prospectively examine wounded veterans over time to determine whether engaging in relationship maintenance strategies close to the time of injury is similarly beneficial.

A related construct to relationship maintenance is relationship awareness, which is defined as the focusing of attention on the relationship (Acitelli, 2002) by incorporating the relationship into one's self-concept (couple identity) (Acitelli, Rogers, & Knee, 1999) and talking with a partner specifically about the relationship (relationship talk) (Badr & Acitelli, 2005). Greater relationship awareness is associated with higher levels of happiness, commitment, and love between married couples (Fletcher, Fincham, Cramer, & Heron, 1987), as well as the psychological adjustment of individual partners (Badr, Acitelli, & Carmack Taylor, 2008). For example, couple identity has been shown to facilitate cooperative patterns of behavior that benefit the relationship (Garrido & Acitelli, 1999) and has been shown to minimize negative effects of a chronic illness on spouse mental health (Badr, Acitelli, & Carmack Taylor, 2007). Badr and colleagues recently demonstrated that lung cancer patients and their partners who engaged in more frequent discussions of their relationship within 1 month of treatment initiation reported greater marital adjustment and less psychological distress up to 6 months later (Badr, Acitelli, & Carmack Taylor, 2008). They also demonstrated that relationship-talk may take on

a variety of forms in the cancer context including talking about relationship memories, plans for the future, and problem solving about cancer-related issues that have impacted the relationship (Badr & Carmack Taylor, 2006).

In sum, relationship resilience research would suggest that viewing the aftermath of combat wounds and injuries as a "we" experience and making efforts to maintain the relationship and enhance closeness may play an important role in couples' psychological and marital adaptation. Understanding the behaviors that help military couples maintain or reestablish relationship homeostasis and quality and that allow them to enhance their marriage is important – particularly for those who must cope with wounds and injuries and who will likely have to consider a "new normal" for their relationship.

Intimacy process models. Reis and Shaver's Interpersonal Process Model defines intimacy as a process whereby one person expresses important self-relevant feelings and information to his or her partner, and, as a result of the partner's response, comes to feel understood, validated, and cared for (Reis & Shaver, 1988). The model emphasizes two components of intimate interactions: self-disclosure and partner responsiveness. Self-disclosure is the communication of personally relevant and revealing information to another person. That person then responds by disclosing personally relevant facts, thoughts, or feelings. The process then proceeds to the perceptions and appraisals by the speaker regarding what the listener has said. For the interaction to be intimate, the speaker needs to interpret the listener's statements as responsive. That is, the speaker needs to perceive that the listener has understood the content of the person's disclosure and, as a result, feel accepted and cared for. Laurenceau and colleagues expanded the Interpersonal Model of Intimacy to include perceived partner disclosure as well as self-disclosure (Laurenceau, Barrett, & Peitromonaco, 1998). According to their model, both self- and partner-disclosures contribute to the development of intimacy through the degree to which the speaker feels that their partner is responsive.

Evidence supporting the Intimacy Process Model in couples coping with health-related stress comes from recent studies conducted by Manne and colleagues. For example, in an observational study, 98 couples coping with early stage breast cancer participated in two discussions and then rated perceived self-disclosure, partner disclosure, partner responsiveness, and intimacy experienced during the discussion (Manne et al., 2004a). Results showed that, for patients, perceptions of greater partner disclosure were associated with greater perceived partner responsiveness, which in turn was associated with greater intimacy. The authors surmised that one reason why partner disclosure predicted patient feelings of intimacy was because this type of disclosure was associated with greater feelings of acceptance, understanding, and caring. For partners, greater self-disclosure was associated with greater perceived patient disclosure, which in turn was associated with greater perceived intimacy. Interestingly, patient disclosure was not associated with greater intimacy for either patients or their partners.

In a subsequent cross-sectional study, Manne and Badr (2009) examined intimacy processes in couples coping with head and neck and lung cancers. Multilevel analyses using the Actor–Partner Interdependence Model (Kenny, Kashy, & Cook,

2006) showed that intimacy fully mediated associations between self- and perceived partner disclosure and distress. Evidence for moderated mediation was found; specifically, lower levels of distress were reported as a function of intimacy, but these associations were stronger for partners than for patients.

Taken together, research on intimacy process models in the context of health-related stress may have important implications for future research on wounded veterans and their spouses. Studies have shown that Vietnam veterans and their partners often experience problems reestablishing intimacy after deployment and more recent data from OIF/OEF suggests a similar trend (Erbes, Polusny, Macdermid, & Compton, 2008). Given this, psychological interventions that promote spouse acceptance and validation may improve feelings of closeness for both the veteran and his or her spouse. A focus on the degree to which the healthy partner discloses his or her own feelings and concerns may also prove beneficial for the couple.

Summary

Relationship process models posit that couples manage the challenges associated with serious life stressors together by discussing concerns and feelings, engaging in joint problem solving, and by talking about aspects of their relationship that are separate from the health condition in order to maintain a sense of normalcy and connection. They also suggest that from a couples' perspective, successful adaptation may not be as dependent upon the specific characteristics of the service member's injury per se, but rather on how well the couple integrates the health condition into their lives.

Challenges and Future Directions

As our review suggests, there are a number of unexamined issues with regard to couples' adaptation to combat wounds and injuries. Most research to date has focused on the effects of war-related injuries on the individual outcomes of wounded veterans and, to a lesser degree their spouses and family members. We believe much can be achieved by adopting a more dyadic focus by examining couples' interaction patterns as well as how they cope and adjust together. Because social support is an interpersonal process, relationship process models including dyadic coping and relationship resilience models offer much promise for evaluating the role of intimate relationships in adaptation to these injuries. One advantage of these models is that support is viewed as arising out of an ongoing relationship with a history of interactions and accompanying expectations, as well as being influenced by personal characteristics that each individual brings to the interaction that color both the quality of the interaction and the perception of others' responses.

However, it is important to keep in mind that these models were developed largely in the context of cancer and other chronic diseases. Like couples coping with combat wounds, couples coping with diseases such as cancer must often cope with physical debilitation and/or disfigurement, traumatic stress, a long recovery process and late effects, and changes in roles and responsibilities, life plans, and patterns of relating. However, the experiences of military couples are also unique in a number of ways. For example, military couples are generally younger than couples coping with cancer and must endure long intervals of separation, wearing on the relationship before the wounded service member comes home. In addition, spouses may not be the primary or best source of emotional support for service members who have been in combat. Some veterans may feel more comfortable disclosing concerns to other veterans who have been through similar experiences, and this may add additional stress to already stressed relationships. More research is needed to determine whether these differences contribute significantly to couples' adjustment and whether they should be included in models of couples' adaptation.

Research in civilian populations suggests that it is important for couples to maintain a sense of normalcy and identity separate from illness. More research is needed however, to determine whether this is the same for couples coping with combat-related injuries. A related issue is that models should be expanded to consider the possibility that a veteran's injury may help to bring couples closer together, both in terms of attending to a previously unsupportive relationship or deepening intimacy in an already supportive one. Finally, understanding why some veterans do not get the support they want or need from their partners and why certain couples are at risk for poor psychosocial outcomes will help clarify the role of intimate relationships in both partners' adaptation.

From a methodological perspective, it is important to note that dyadic-level analyses have not been used to examine military couples' adjustment, as data are typically collected only from the veteran. In addition, measures of couples' communication often involve self-reports that assess the quantity rather than the quality or nature of such discussions and the relative paucity of quantitative, prospective studies limits our understanding of the support needs of veterans and their partners and how those needs may change over time.

A number of moderators of the support–adaptation relationship have been identified by previous work and suggest that existing models may need refinement. For example, individuals dealing with disfiguring injuries may benefit most from emotional support. The degree of match between the type of support provided and the type and amount of support preferred is another potential moderator of the degree of effectiveness of social support. Sociodemographic variables such as age, education, and culture may also be important. For example, couples at different stages of the life cycle may experience different relationship stressors as a function of the veteran's injury and therefore have different expectations regarding not only social support but also interaction with their partners. Likewise, most do not report the ethnic or cultural background of the service members they study, which has not allowed us to examine the role of culture in support-related interactions. It is also unclear whether couples where both partners are in the military differ in adjustment

or experience the same difficulty adjusting as couples comprised of one military service member and one civilian. Pre-illness relationship factors such as marital intimacy, commitment, and satisfaction may influence both partners' motivations to use the injury as an opportunity to enhance their relationship. Finally, individual factors such as personality and interpersonal skills that partners bring to this situation may also influence relationship processes. Some couples may thus need to work harder to maintain their relationships and enhance intimacy.

Because most studies examining social support processes in military couples have focused on male veterans and female partners, it remains unclear whether gender differences in adjustment or the efficacy of certain types of social support exist. More studies are needed that include both members of the couple and include wounded veterans of both genders so we can disentangle the effects of gender and social role. Marital quality may be an important moderator or proxy for social support. Individuals who are more maritally satisfied may perceive greater support, may explain away partner unsupportive behaviors, and may benefit more from the support that they do receive. Finally, because combat wounds affect both members of the couple, when treating married or partnered veterans, intervention strategies may need to involve both members of the couple and address each of their unique needs and concerns.

In conclusion, intimate relationships appear to exert a strong influence on veterans' psychosocial adaptation. Given this, future research may benefit from an increased focus on couples' interactions to address ways that partners can adaptively cope together.

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Chapter 12
Parent and Adolescent Positive and Negative Disability-Related Events and Their Relation to Adjustment

Elizabeth Mazur

Abstract This project merged Felner's transitional events model with the social model of disability to develop profiles of life events specific to the experiences of parents with acquired physical disability and their adolescent children and examined the relations between these events, severity of disability, and psychological adjustment. Parents and adolescents reported significantly more positive than negative disability-related events. Frequency of parents' negative events correlated significantly with multiple measures of self-reported adjustment, their reports of adolescents' internalizing and externalizing problems, and adolescents' self-reports of adjustment. Frequency of adolescents' negative disability-related events correlated significantly with self-reported depression and lower self-esteem. Several correlations between parental rating of severity of disability and number of physical limitations with their and their children's adjustment were significant. Implications for understanding the daily effects of parental physical disability on civilian and military parents and their children are discussed, and recommendations for research on disability in military families are suggested.

Among the general American population, about 21% of children under the age of 18 live with at least one parent with a disability (U.S. Census Bureau, 2004). Though about half of these parents may have physical disabilities (Tuleja, Rogers, Vensand, & DeMoss, 1998), the empirical literature on parenting with physical disabilities and on their children's experiences and adjustment is quite limited (Meadows-Orlans, 2002). Research on the impact of parental physical injury during military deployment is even rarer. Yet, disability is a large and growing problem in military populations in the United States (Bell, Schwartz, Harford, Hollander, & Amoroso, 2008). Between 1981 and 2005, for example, 4% of soldiers discharged from the Army left with a documented permanent disability, and the annual disability discharge risk per 100,000 increased by over 600% within that 24-year

E. Mazur (✉)
Department of Psychology, Pennsylvania State University, Greater Allegheny, McKeesport, PA, USA
e-mail: exm32@psu.edu

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time period (Bell et al., 2008). Because a disproportionate number of these soldiers were between ages 22 and 39, many were likely to be parents of minor children.

This chapter begins by briefly reviewing the empirical and theoretical bases for studying the disability experience of families with parents with physical disabilities. It then describes two related studies that identify negative and positive disability-related events of parents with physical disabilities and of their adolescent children, the second of which correlates the occurrence of these events to adjustment. For brevity's sake, only portions of the research (Mazur, 2006, 2008) most relevant to military families are presented, and discussion of the two studies is combined. Finally, the chapter addresses directions for future research on negative and positive disability-related events and adjustment in military families.

Families with Parents with Physical Disabilities

American First Lady Michelle Obama, who grew up with a father with multiple sclerosis (MS), has noted the challenges of returning from military service with mental and/or physical disabilities. In a *Reader's Digest* interview, Mrs. Obama explained that observing her father cope with his disability positively shaped her own perspective on life (Henneberger, 2008). This statement is remarkable in its contrast to the common assumption that parents with physical disabilities and their families experience more than their fair share of stressful events and the adjustment problems that are assumed to follow (Armistead, Klein, & Forehand, 1995; Iwasaki & Mactavish, 2005). Certainly, adults with MS, rheumatoid arthritis (RA), and spinal cord injury (SCI) report greater rates of depression and anxiety than those without disabilities (Hawley & Wolfe, 1988; Kemp & Krause, 1999; Olkin, 2004). Similarly, children of parents with MS, with arthritis, and with chronic pain show poorer adjustment than children with parents without chronic illness or disability (Hirsch, Moos, & Reischl, 1985; Jamison & Walker, 1992). Still, some disability researchers have contended that, overall, these families are more similar to than dissimilar from those without disabilities (Kirshbaum & Olkin, 2002), an argument reminiscent of controversial comparisons made between children of military families and civilians (Cozza, Chun, & Polo, 2005).

The Social Model of Disability and Felner's Transitional Events Theory

One way to reconcile these two seemingly disparate conclusions concerning parental disability is to change the emphasis from that provoked by the medical model, which conceptualizes disability as mainly a medical problem that resides within the individual, to that of the social model of disability, which emphasizes

the daily events that comprise a person's *disability experience* (Pledger, 2003). Early studies have suggested that these environmental interactions might include the inability to participate in family activities, negotiation of household chores, prejudiced attitudes towards disability, outside interferences with parenting, architectural inaccessibility, and challenges of transportation (Iwasaki & Mactavish, 2005; Kirshbaum & Olkin, 2002; Olsen & Clarke, 2003; Prilleltensky, 2004). For military families, stressful disability-related events also may include the spouse's departure to join the injured service member at a distant military hospital, and especially for Reservists, difficulty accessing military benefits (Segal & Segal, 2003) and the incomplete provision of medical and mental health care (Chartrand & Siegel, 2007).

These disability-related experiences can be effectively operationalized as a socioecological phenomenon within Felner's transitional events theory (Felner, Farber, & Primavera, 1983; Felner, Rowlison, & Terre, 1986). It is a person-environment approach that emphasizes individuals' need to master the adaptive tasks associated with extensive and enduring changes in a person's life, such as the development or occurrence of an acquired physical disability due to illness or injury either by the individual or by a significant other. Thus, the transitional events model helps conceptualize parental disability as a marker for proximal negative and positive interpersonal and environmental events that act as the mechanisms by which acquired parental disability affects family members' everyday lives.

With the exception of Buck and Hohmann (1981), researchers have rarely investigated the possibility of positive disability-related experiences. Anecdotal and empirical evidence has suggested that a parent's physical disability may serve positive functions within families, such as increasing emotional closeness, helping children learn responsibility, compelling families to simplify their lives, increasing the number of adults on whom a child may depend, and leading children to feel comfortable with persons with disabilities (Armistead et al., 1995; Buck & Hohmann, 1981; Prilleltensky, 2004). Thus, our research program examined positive, as well as negative, events that family members experience due to parental physical disability.

Study 1: What Are the Common Negative and Positive Disability-Related Events Experienced by Parents with Physical Disabilities and Their Adolescent Children?

In order to extend Felner's transitional events model (Felner et al., 1983) to this population, it was first necessary to ascertain which events family members experience as negative and as positive. Consistent with the disability studies' concept of consumer input (Pledger, 2003), we utilized a *bottom-up approach* that identifies events meaningful to people who have experienced the situation themselves and to those who have been in close contact (Felner et al., 1986; Turner & Wheaton, 1997). Also, as with cognitive theories of stress, in which appraisal of the stressor

is viewed as critical to the response (e.g., Lazarus & Folkman, 1984), participants, rather than researchers, identified the valence of the experienced events.

Interviewers queried four types of participants as knowledgeable informants: parents with physical disabilities, their nondisabled spouses, adolescent children living with a physically disabled parent, and professionals in the physical disability field. Gathering these multiple perspectives allowed for a systemic perspective on living with parental disability; although whole families are affected (Kelley, Sikka, & Venkatesan, 1997; Prilleltensky, 2004), each member has his or her own perspective and experiences. Health professionals and clinical researchers are uniquely placed to learn about a wide array of difficulties and strengths that parents with physical disabilities and their children may experience.

Because Felner's transitional event model is particularly suited to studying adaptation to an unexpected event, and some researchers have suggested that chronic physical disability occurring in the child-rearing period can be especially devastating to family processes (Meadows-Orlans, 2002), both studies focused on adolescents and their parents who acquired a physical disability after their child's birth. We interviewed adolescents because they are likely to be better informants than younger children, and because stress in the family, including parental illness (Compas et al., 1994), has been related to their psychological symptomatology (Doyle, Wolchik, & Dawson-McClure, 2002; Hirsch et al., 1985). Also, because family members, friends, acquaintances, and parents themselves may behave differently when the threat of death exists (Armistead et al., 1995), both studies included only members of families in which the parent's acquired disability condition was chronic but unlikely to be imminently terminal, such as MS, RA, and SCI.

Method

Participants

Eighteen adolescents (*M* age = 16.1, SD = 2.9), 12 mothers, and 3 fathers with diagnosed physical disabilities (*M* age = 42.8, SD = 8.2), 5 and 2 of their nondisabled husbands and wives, respectively (*M* age = 43.9, SD = 6.4), and 10 professionals participated. The children's mean age at time of parents' first sign of disability was 8.1 years (SD = 4.9).

Family members from 24 families participated. Fifty percent of the adolescents' parents (8 mothers and 1 father) were interviewed as parents with disabilities. Sixty percent of the parents with physical disabilities had an adolescent child who also participated in the project. Every spouse who was interviewed had a spouse with disabilities participating in the study.

Eighty-three percent (83%) of all participating adolescents' parents were diagnosed with MS; the remainder included one father with SCI, one father with stroke, and one mother with chronic fatigue syndrome. All participating parents with disabilities, except one mother with limb girdle muscular dystrophy, had been diagnosed with

MS. All participating spouses had partners with MS. The professionals included four researchers, three clinicians, and three university- and/or hospital-based researcher/clinicians across the United Stated and were neither affiliated with the research project or the university sponsor.

Following the WHO (2001) classification, interviewers asked if the disabled parent had no, some, or a lot of difficulty lifting a grocery bag, lifting a glass, holding a pen, shaking hands, bending to pick up a shoe, standing for 20 min, climbing stairs, and walking three blocks. To create a measure of the severity of disability, the number of activities in which a person had any limitation was counted, resulting in a score ranging from 1 to 8. Persons with one activity limitation are considered as having mild disability, two to three as moderate, and four or more as severe. The mean self-reported disability score of the 9 nonparticipating parents with disabilities of participating adolescents was 4.8 (SD = 1.1). This mean score does not differ significantly from the mean of 4.4 (SD = 1.8) reported by the 15 participating parents with disabilities, indicating no self-selection of study participation based on self-perceived severity of disability. Interestingly, spouses of parents with disabilities evaluated their partner's disability as more severe ($M = 6.3$; SD = 2.2).

Procedure

Adolescent, parent, and spouse participants were recruited through numerous methods. Most (79%) were recruited through the MS Society's regional chapter ($n = 26$), its affiliated support groups ($n = 4$), and the local MS Service Society ($n = 2$). Twenty-one percent were recruited though letters mailed to members by a local Parents with Disabilities Project ($n = 3$) and through an email notice distributed to the investigator's campus community ($n = 5$).

To avoid biases in event nomination that might result if questions were too specific, individual phone and in-person interviews followed a standard but open-ended protocol. Adolescents were asked to identify negative and positive events related to having a physically disabled parent (e.g., "What kinds of things have occurred since your parent's illness began that has helped make things easier for you to adjust to having a parent with a disability?"). Parents with disabilities were asked similar questions on the basis of what they experienced (e.g., "What do you think is the most positive part of parenting with a physical disability?") and what they perceived their children as experiencing (e.g., "What kinds of things have occurred since your illness began that have made things more difficult for your child?"). Spouses, too, were queried about their children's negative and positive experiences. Interviewers asked professionals, who were to respond based on their clinical work and research, to identify the negative and positive events that they perceived as frequently experienced by adolescent children of parents with physically disabilities (e.g., "What kinds of things make it more difficult for adolescents to adjust to living with a parent with a disability?").

Development of the Parental Disability Events Scales

Three independent raters coded the transcripts to develop two comprehensive lists (positive and negative events) of all topics discussed. Consistent with previous small event measures (Sandler, Wolchik, Braver, & Fogas, 1986), coders generated life events from those lists based on these criteria: (a) must be an objectively verifiable, behavioral occurrence; (b) must closely represent the participants' wording and meaning; and (c) cannot be a direct manifestation of a psychological disorder or physical problem of the adolescent (e.g., "I felt anxious") or of the parent (e.g., "I was tired"). Coders used this criterion to avoid confounding events with psychological adjustment and with the parent's specific disability-related symptoms.

Coders created 216 parent and 374 adolescent events written in the first person for their intended use as items on disability events checklists. Working together, three different coders reduced the number of parent events to 76 and the number of adolescent events to 93 by combining similar events and rewording very specific events more broadly. Consistent with most cognitive theories of stress, as discussed above, coders used the participants' own rating of events as positive and negative. For example, events that participants had considered helpful for parents with physical disabilities and for adolescents living with parents with a disability were coded as positive; events that participants had considered as difficult were considered negative. Events that some participants mentioned as positive yet by others as negative were coded as ambiguous.

Results

Forty-two parent events were rated as positive, and 34 were rated as negative. For the adolescent events, 50 were rated as positive, 37 as negative, and 6 as ambiguous.

Parent Events

Participants most frequently volunteered the following events as positive for parents with physical disabilities: parent attending a support group for people with the same or similar disability (50%, including 73% of the parents with disabilities); child assisting with household chores (38%, including 47% of parents with disabilities); and spouse assisting with household chores (21%, including 20% of the parents with disabilities). Only parents with physical disabilities mentioned these two positive events frequently: the parent discussing the disability with the child (33%); and the parent spending enjoyable free time with one's child (27%).

Parents with physical disabilities most frequently nominated the following four events as negative: the parent being unable to participate in an activity with one's child, such as playing sports and roughhousing (67%); a household chore taking longer to complete than before the disability or for a nondisabled person (54%); the parent being unable to take the child to a desired place or activity (33%); and the parent asking another adult for assistance (27%).

Child Events

The event most frequently nominated as positive for children of parents with disabilities, and one volunteered by members of each of the four groups of participants, was discussion of the disability between the disability and the parent (42% overall; 54% of parents with disabilities, 57% of the nondisabled spouses, 33% of adolescents, and 30% of experts). Parents with disabilities and adolescent children also frequently nominated as positive for the child the events of meeting families of persons with similar disabilities as the parent's (27% of the parents with disabilities, 28% of the adolescents) and of the child reading about the parent's disability on his or her own (20% of the parents, 33% of the adolescents). Lastly, 27% of the parents considered as positive their child writing a paper about the disability for school.

The most frequently nominated negative event for children of parents with disabilities was the child doing a household chore, such as washing dishes, cleaning, and cooking (50% overall; 53% of parents with disabilities, 29% of the nondisabled spouses, 61% of adolescents, and 40% of experts). Twenty percent of all participants also consistently volunteered as negative the parent with physical disability struggling with an everyday task (33% of parents with disabilities, 14% of nondisabled spouses, 17% of adolescents, and 10% of experts) and the parent with disability being unable to take the child some place he or she wanted to go (20% of parents with disabilities, 29% of nondisabled spouses, 22% of adolescents, and 20% of experts). Eighteen percent of all participants nominated as negative the parent with disability needing help from the child for daily personal tasks (20% of parents with disabilities, 29% of spouses, 1% of adolescents, and 30% of experts) and the parent with disability being unable to participate in a physical activity with the child (20% of parents with disabilities, 29% of spouses, 17% of adolescents, and 10% of experts).

Study 2: Are the Frequencies of Negative and Positive Disability Events Associated with Parent and Adolescent Adjustment?

The goal of the second study was to examine whether the number and valence of experienced disability-related events is related to adolescents' and parents' adjustment.

Method

Participants

Nineteen families with one parent with an acquired physical disability and at least one resident adolescent child age 12–17 were recruited through ads in the newspaper ($n=5$) and in the teen newsletter affiliated with the local branch of the National

MS Society ($n=8$); letters mailed to participants of a local research hospital's Arthritis Network Disease Registry ($n=5$); and by another family participant ($n=1$). Eligibility criteria were identical to those of the first study. Ten parents (53%) had been diagnosed with MS, six with RA (26%), one with fibromyalgia, one with degenerative disk disease, and one with lupus. Mean duration of disability was 9.2 years (SD = 3.4). On a scale of 1 (mild) to 4 (very severe), parents rated the severity of disability as 2.4 (between moderate and somewhat severe), SD = 0.8. Following the WHO (2001) classification, the average reported number of limitations in the total sample of 19 parents was 4.2 (SD = 1.6) at the first interview.

Mean age of the 16 mothers and 3 fathers was 44 (SD = 6.3). Mean age of the 10 sons and 9 daughters at time of first interview was 14.5 years (SD = 1.7). Their reported mean age at time of parents' first sign of disability was 6.3 years (SD = 4.2).

Interviews

Research assistants interviewed participants twice individually by telephone; most family members were interviewed on the same day (first interview $M=1.1$ days apart, SD = 1.9; second interview $M=1.2$ days apart, SD = 2.0). To determine test-retest reliability of the *Parental Disability Event Profiles* (PDEPs), the second phone interviews consisted only of the PDEP and the measure of severity of disability for the parent. Mean number of days between first and second interviews was 8.0 (SD = 2.2) for parents and 8.7 (SD = 3.3) for adolescents.

Parental Disability Events Profiles for Parents and for Children (PDEP-P; PDEP-C)

Using profile items derived directly from Study 1, parents and adolescents separately rated the frequency of 78 and 96, respectively, disability-related events during the past month. Two and three events were added to the original parent and adolescent profiles, respectively, in order to maintain consistent content between the two scales. The scales' responses are: 0 (never), 1 (1–2 times), 2 (3–4 times), and 3 (5+). Participants also rated their experienced events as positive, negative, or neutral.

Each PDEP scale generated four scores: (1) *number of specific negative events* – a count of the number of different types of disability-related events in the last month that participants rated as negative; (2) *number of specific positive events* – a count of the number of different types of events in the last month that participants rated as positive; (3) *total frequency of negative events* – a summary of the total frequencies in the last month of each experienced disability-related event rated as negative; and (4) *total frequency of positive events* – a summary of the total frequencies in the last month of each experienced disability-event rated as positive. The first two scores are similar to the checklist approach used in previous studies

of adolescent and adult life stress (e.g., Compas, Howell, Phares, Williams, & Ledoux, 1989). The third and fourth scores emphasize the cumulative number of adaptive tasks and challenges a person faces daily, analogous to the social model of disability.

Parent Adjustment Measures

Brief symptom inventory 18 (*BSI 18*). BSI 18 (Derogatis, 2001) is an 18-item Likert scale, ranging from 0 (not at all) to 4 (extremely), that assesses psychological distress in community populations. Due to possible confounding of the Somatization scale with parents' physical symptoms, we utilized only the six-item Depression and Anxiety scales in the analyses; coefficient alphas were 0.71 and 0.84, respectively.

Parenting sense of competence scale (*PSOCS*). This scale (Johnston & Mash, 1989; Ohan, Leung, & Johnston, 2000) consists of nine items measuring parenting satisfaction (e.g., "Being a parent makes me tense and anxious") and seven items measuring parents' feelings of self-efficacy (e.g., "Being a parent is manageable, and any problems are easily solved"). Items are endorsed on a Likert scale ranging from 1 (strongly agree) to 6 (strongly disagree). Coefficient alphas for this sample were 0.54 for the total score, 0.64 for satisfaction, and 0.84 for efficacy. Because alphas under 0.60 are often considered unacceptable (DeVellis, 1991), the total scale score was not used in the analyses.

Adolescent Adjustment Measures

Internalizing and externalizing behavior scales and total problems, parent report. Parents completed the Child Behavior Checklist (CBCL; Achenbach, 1991) to assess internalizing (withdrawn, anxious/depressed, and somatic complaints), externalizing (delinquent and aggressive behaviors), and total behavior problems (social, thought, and attention problems in addition to the two subscales above) during the past month. The response format is 0 (not true), 1 (sometimes true), and 2 (often true). Coefficient alphas were 0.93 for the internalizing scale, 0.87 for the externalizing scale, and 0.96 for the total problem scale.

School performance, parent report. Parents assessed their child's academic performance with the seven items that comprise the CBCL's school scale. Four items rate performance in academic subjects and are scored from 0 to 3 (failing, below average, average, above average). Three items assess academic problems and are scored 0 (yes) or 1 (no). Coefficient alpha for this scale was 0.68.

Internalizing and externalizing problems, adolescent report. Adolescents rated their depression on a 3-point scale, in order of increasing severity of the symptom, on the Children's Depression Inventory (CDI; Kovacs, 1981). For each item, adolescents were read three statements and were asked to choose the one that best described them over the past 2 weeks (e.g., "1. You are sad once in a while; 2. You are sad many times; or 3. You are sad all the time"). Coefficient alpha was 0.86 in

the present study. Adolescents reported their anxiety with the Revised Children's Manifest Anxiety Scale (RCMAS; Reynolds & Richmond, 1978), which consists of 28 items (e.g., "You worry a lot of the time") rated on a 2-point yes/no scale. Coefficient alpha was 0.91. Adolescents described their aggressive behavior (e.g., "You get in many fights") on a scale of 0–2 (Not true; Sometimes true; Often true) with the 20 items that loaded on both the male and female versions of the Aggressive scale of the Youth Self-Report (YSR; Achenbach, 1991). Coefficient alpha was 0.85.

Self-esteem and school performance, adolescent report. Adolescents were asked to rate their self-esteem on a 4-point scale on the seven-item global self-worth subscale of the Self-Perception Profile for Adolescence (Harter, 1988). Each item consists of two contrasting descriptions (e.g., "Some kids are often unhappy with themselves BUT other kids are pretty pleased with themselves"). Respondents first choose which statement best describes them, and then must decide whether this statement is "really true for you" or "sort of true for you." Coefficient alpha in the current sample was 0.77. Adolescents described their grades (failing, below average, average, or above average) on the YSR's measure of school performance (Achenbach, 1991), from which we computed the mean score for academic subjects.

Results

Test-Retest Reliability of PDEPs

Test-retest reliability for the PDEPs was assessed using Pearson product-moment correlations between Time 1 and Time 2. For the adolescent scale, correlations were 0.71 for number of specific negative events, 0.86 for total frequency of negative events, 0.90 for number of specific positive events, and 0.88 for total frequency of positive events. For the parent scale, correlations were 0.85 for number of specific negative events, 0.85 for total frequency of negative events, 0.45 for number of specific positive events, and 0.68 for total frequency of positive events. The low reliability for parents' reporting of specific positive events indicates that their scores must be interpreted cautiously.

Frequency of Negative and Positive Events

Means and standard deviations for PDEP and adjustment variables are presented in Table 12.1.

At both Time 1 and Time 2, parents reported experiencing more than twice as many positive than negative events (specific types for Time 1: $t=5.9$, $p<0.001$; Time 2: $t=7.0$, $p<0.001$; total frequency for Time 1: $t=5.2$, $p<0.001$; Time 2: $t=6.6$, $p<0.001$). At both times, adolescents reported three times as many positive

Table 12.1 Descriptive data for PDEP and adjustment variables

Variable	*M*	SD	Range
Parental reports of experienced disability-related events			
Total no. of specific negative events T1	9.9	6.2	2–22
Total no. of specific negative events T2	8.2	6.3	0–19
Total frequency of all negative events T1	20.5	14.4	4–50
Total frequency of all negative events T2	15.7	14.6	0–51
Total no. of specific positive events T1	19.0	5.3	12–33
Total no. of specific positive events T2	20.4	5.5	12–34
Total frequency of all positive events T1	42.3	13.7	24–81
Total frequency of all positive events T2	42.1	14.6	23–83
Parent adjustment			
Depression (P)	55.4	11.0	40–82
Anxiety (P)	54.9	11.8	38–74
Parenting satisfaction (P)	35.6	6.2	17–44
Parenting efficacy (P)	26.6	8.3	12–41
Adolescent reports of experienced disability-related events			
Total no. of specific negative events T1	7.0	4.2	0–15
Total no. of specific negative events T2	7.4	6.5	0–22
Total frequency of negative events T1	12.6	9.4	0–37
Total frequency of negative events T2	12.4	12.1	0–48
Total no. of specific positive events T1	22.4	8.9	9–48
Total no. of specific positive events T2	20.3	8.9	11–42
Total frequency of positive events T1	42.5	16.6	18–80
Total frequency of positive events T2	36.7	13.9	18–59
Adolescent adjustment			
Internalizing problems (P)	12.8	10.2	0–35
Externalizing problems (P)	8.7	6.3	2–23
School competence (P)	11.9	2.8	5–15
Anxiety (A)	10.8	7.1	0–23
Depression (A)	9.9	7.2	0–23
Aggression (A)	10.1	6.7	2–24
Self-esteem (A)	2.9	0.6	2–4
Academic performance (A)	2.1	0.6	0.5–3

Note: $n = 19$ except for Time 2 and academic performance measures for which $n = 18$
T1 Time 1; *T2* Time 2; *A* adolescent report; *P* parent report

than negative events (specific types for Time 1: $t = 7.6$, $p < 0.001$; Time 2: $t = 5.56$, $p = 0.001$; total frequency for Time 1: $t = 7.7$, $p < 0.001$; Time 2: $t = 7.1$, $p < 0.001$). Paired samples *t* tests found one significant difference between parent and adolescent reports of negative and positive events; at Time 1 parents reported a significantly higher frequency of negative events ($M = 20.5$) than did adolescents ($M = 12.6$), $t = 2.2$, $p < 0.05$. The difference between Time 1 parent ($M = 9.9$) and adolescent ($M = 7.0$) reports of specific types of negative events nearly reached significance, $t = 2.1$, $p < 0.06$.

A series of *t* tests found no gender differences in mean scores between male and female adolescents on the PDEP-C and adjustment measures. Adolescents' age,

however, did correlate significantly with number of specific types ($r=0.45$, $p=0.05$) and total frequency of negative events ($r=0.51$, $p<0.05$) as well as with total frequency of positive disability-related events ($r=0.52$, $p<0.05$) reported on the PDEP-C at Time 1, with similar results at Time 2. The association between adolescents' age nearly reached significance with number of specific types of positive events at Time 1 ($r=0.43$, $p<0.07$), and was significant at Time 2 ($r=0.50$, $p<0.05$). However, adolescents' age did not correlate significantly with measures of adjustment.

History and Severity of Disability

Table 12.2 illustrates that there were significant associations between the number of physical limitations parents reported at Time 1 and their reports of specific types and total frequency of negative, but not positive, events and adolescent reports of total frequency of negative, but not positive, events. Also, there were several significant associations between the parental ratings of severity of disability and number of limitations with parents' and adolescents' adjustment. The two measures of physical disability were not significantly correlated with each other, $r=0.31$, $p=0.20$.

Table 12.2 Zero-order correlations between measures of severity of disability and negative disability-related events and adjustment

Measures	Perception of severity	Number of limitations
Parent events		
Specific neg. events	0.41	0.58[a]
Freq. of neg. events	0.36	0.51[b]
Adolescent events		
Specific neg. events	−0.24	0.35
Freq. of neg. events	−0.07	0.52[b]
Parent adjustment		
Anxiety (P)	0.63[b]	0.27
Depression (P)	0.69[a]	0.53[b]
Parenting satis. (P)	−0.22	0.19
Parenting efficacy (P)	−0.29	−0.17
Adolescent adjustment		
Internalizing (P)	0.57[b]	0.61[a]
Externalizing (P)	0.64[a]	0.40
School comp. (P)	−0.22	−0.32
Anxiety (A)	0.24	0.76[a]
Depression (A)	0.21	0.71[a]
Aggression (A)	0.22	0.53[b]
Self-esteem (A)	−0.37	−0.64[a]
Academic (A)	0.07	−0.05

Note: $n=19$. *A* adolescent report; *P* parent report
[a]$p<0.01$
[b]$p<0.05$

Endorsement Patterns

Tables 12.3 and 12.4 list the ten most frequently reported disability-related events that parents with disabilities and their adolescent children, respectively, experienced during the previous month, the percent endorsing them as positive or negative, and the percent experiencing them three times or more during the previous month.

Table 12.3 Ten most frequently experienced disability-related events endorsed by parents

Event	% Endorsed	% Neg.	% Pos.	% 3X Mth
I talked or spent time with a nondisabled friend	100	0	95	90
I talked with my child about things not related to my disability	100	5	89	95
I spent enjoyable free time with my child	95	5	84	84
I asked my child to help me w/ household chore	95	32	42	90
I used convenience/take-out food for dinner	95	11	47	53
It took me longer to do a household task than before the disability or for nondisabled person	95	79	5	53
I was unable to participate in a physical activity with my child	89	79	0	42
I participated in a nonphysical activity just for my pleasure and not related to disability	89	0	89	42
My child helped do household chores	84	16	58	47
I talked with my child about the disability	84	5	58	16

Table 12.4 Ten most frequently experienced disability-related events endorsed by adolescents.

Event	% Endorsed	% Neg.	% Pos.	% 3X Mth
My PWD asked me to retrieve something for him/her	100	5	53	53
Family members joked around w/ each other	95	0	95	63
I spent enjoyable free time with my PWD	95	5	84	47
I helped my PWD with shopping	89	0	47	26
My PWD struggled with an everyday task	89	58	16	26
I said something to my PWD to make sure he/she knew that he/she was important	89	0	84	37
My PWD took me someplace fun by him or herself	89	0	84	5
I did a household chore (not cooking or bill paying)	84	0	31	58
My PWD needed me to do something physical for him/her.	84	5	5	21
My PWD was around the house when I needed	84	0	74	42

Note: Percentage positive and percentage negative may not add up to 100% due to participants' option of rating event as neutral
PWD parent with disability

Correlations Among Parent and Child Reported Disability-Related Events and Adjustment

Table 12.5 displays the zero-order correlations among parent negative disability events and parent and adolescent adjustment. These results show that both the number of specific types and total frequency of parents' negative events correlated significantly with multiple measures of self-reported adjustment problems and weak feelings of parenting self-efficacy, and with parental reports and self-reports of adolescents' internalizing and externalizing problems symptoms and lower self-esteem.

The number of specific types of adolescents' negative events did not correlate significantly with any measures of parent and child adjustment. However, the total frequency of adolescents' negative events correlated significantly with self-reported depression ($r=0.46$, $p<0.05$) and lower self-esteem ($r=-0.52$, $p<0.05$), and approached significance with self-reported anxiety ($r=0.42$, $p=0.07$).

In contrast to the results for parent- and child-reported negative disability-related events, there was only a borderline significant association for positive disability-related events; the total frequency of adolescents' positive events was associated with less parent-reported anxiety ($r=-0.46$, $p=0.05$).

Discussion

Both the parent and adolescent scales tap some events and domains identified elsewhere in the literature as being negative or challenging to families with parents with physical disabilities, such as the need to complete parenting and household tasks, restricted access to children's schools and other facilities, prejudices faced by parents with disabilities, and the need to rely on other adults for assistance (Olsen & Clarke, 2003; Wates, 1999). However, the five most frequent parent-reported disability-related events in Study 2, derived directly from Study 1 interviews, are not experiences specific to persons with physical disabilities. Although it is likely that the one universal experience of the adolescent participants – being asked to retrieve something for the parent with disability – occurs less frequently to adolescents living with nondisabled parents, that and the two other most commonly adolescent-reported disability-related events – spending enjoyable free time with parent and family members joking around with each other – do not occur uniquely to families in which one parent is disabled.

In both studies, parents and adolescents reported many more positive than negative events. This result challenges clinical psychological and medically oriented research that describes parents with physical disabilities and their families as experiencing intolerable stress (Armistead et al., 1995; Iwasaki & Mactavish, 2005), though it remains consistent with previous evidence concerning adolescents' adaptation to family transitions (Doyle, Wolchik, Dawson-McClure, & Sandler, 2003; Kanner, Feldman, Weinberg, & Ford, 1991). However, in Study 2 there was only one significant direct correlation between positive events and symptomatology, that

Table 12.5 Zero-order correlations among Time I measures of parents' negative disability-related events and parent and adolescent adjustment

Time 1 measures	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Parent events														
Specific neg. events														
Freq. of neg. events	0.92[a]													
Parent adjustment														
Anxiety (P)	0.57[b]	0.52[b]												
Depression (P)	0.65[a]	0.65[a]	0.77[a]											
Parenting satis. (P)	0.01	0.03	−0.35	−0.29										
6. Parenting efficacy (P)	−0.59[a]	−0.61[a]	−0.17	−0.28	−0.30									
Adolescent adjustment														
Internalizing (P)	0.60[a]	0.67[a]	0.60[a]	0.76[a]	−0.12	−0.29								
Externalizing (P)	0.40	0.45[b]	0.51[b]	0.71[b]	−0.05	−0.26	0.78[a]							
School comp. (P)	−0.14	−0.14	0.09	−0.17	−0.53[b]	0.32	−0.21	−0.58[b]						
Anxiety (A)	0.67[a]	0.66[a]	0.28	0.55[b]	0.12	−0.14	0.69[a]	0.49[b]	−0.21					
Depression (A)	0.56[b]	0.45	0.08	0.35	0.12	−0.07	0.49[b]	0.27	−0.13	0.89[a]				
Aggression (A)	0.27	0.32	0.22	0.34	0.20	−0.11	0.47[b]	0.54[b]	−0.43	0.62[a]	0.48[b]			
Self-esteem (A)	−0.61[a]	−0.43[b]	−0.40	−0.47[b]	0.00	0.28	−0.57[b]	−0.39	0.14	−0.78[a]	−0.76[b]	−0.44		
Academic (A)	−0.35	−0.35	0.04	−0.22	−0.34	0.64[a]	−0.12	−0.30	0.56[b]	−0.18	−0.04	−0.23	0.16	

Note: $n = 19$. *A* adolescent report; *P* parent report[a]$p < 0.01$
[b]$p < 0.05$

between total frequency of adolescents' positive events and less parent-reported anxiety. Similar to Jackson and Warren's (2000) study of children's life events and Reich and Zautra's (1988) conclusion that positive events have few significant relationships with adjustment, this paucity of significant associations suggests that negative events may carry greater psychological weight. However, military researchers are encouraged to examine the possibility of positive events as protective factors moderating or mediating the adjustment of military families to service-related disabilities. Bowen, Mancini, Martin, Ware, and Nelson (2003), for example, found no direct effects of informal community networks on adjustment for Air Force families. Yet, positive sense of community emerged as an important mediator between unit and community network support and military family adaptation.

The event most frequently nominated in Study 1 as positive for adolescents was the family members' discussion of the disability, and half of the parents also nominated family discussion as helpful for themselves. Similarly, most Study 2 parents and adolescents reported family discussions of parental disability as positive and as occurring at least once during the previous month. Also, most parents had recently read on their own about their disability or illness. These results suggest that although stress and coping research often portrays individuals as passive (Felner et al., 1986), parents with physical disabilities and their children appear to have little difficulty discussing their impairment with their children and are actively trying to understand their experiences. However, research suggests that incomplete or inaccurate information may be frequently a problem for service-related injuries, at least initially, and that the information that military parents share with their children ranges from inadequate to more than necessary (Cozza et al., 2005).

In Study 1, the second most frequently nominated positive event for adolescents was meeting families of persons with similar disabilities as their parents. Other positive events related to opportunities due to parent's disability (adolescents); informing others about the disability (adolescents), and volunteer work/helping others (parents). Study 2 adolescents frequently endorsed helping a stranger with a disability as a positive event, and in both studies, parents with disabilities and their children perceived as helpful support from health organizations and nonfamily members, and, in particular, attending a disability-related support group (parents). These results suggest that in the military community, support groups and organizations lead by disabled military parents and/or their family members might be effective and appreciated interventions.

It is worth noting that not one Study 1 participant nominated as positive the parent with physical disability receiving direct emotional support from the spouse, and the most frequently endorsed types of spousal support in Study 2 were instrumental support with childcare and with household chores. While it is possible that emotional support may be taken for granted or not recalled, the spouses may be at least somewhat disengaged. Finklestein and French (1993) have reported that adults who acquire substantial impairments frequently experience serious problems with their relationships, especially those already strained. Although it is unknown how this issue plays out for military families, it is unlikely to be much happier; research

suggests that deployment-related reunions (Faber, Willerton, Clymer, MacDermid, & Weiss, 2008) and combat-related traumatic experiences (Basham, 2008; Goff, Crow, Reisbig, & Hamilton, 2007) are detrimental to marriage. High levels of trauma symptoms may make it difficult for male solders to be emotionally available to their female partners (Goff et al., 2007), who may reciprocate the lack of emotional support.

Most Study 1 adolescents nominated chores as a negative event of living with parents with physical disabilities. However, despite the common perception of children of parents with physical disabilities as burdened by household tasks (e.g., Olsen, 1996), Study 2 adolescents were less frequently negative about performing household chores than were their parents. Not one Study 2 adolescent considered as negative the commonly reported events of helping parents shop or doing a household chore, most enjoyed cooking a meal for themselves, and almost all rated as either positive or neutral the universal and frequent experience of parents with disabilities asking them to retrieve objects. It is important for clinicians and family members to remember that such initially bothersome tasks can develop skills and feelings of competence and mastery. Research suggests, too, that adolescents in all types of families spend a considerable amount of time doing chores (Gager, Cooney, & Call, 1999).

For Study 2 parents, the most common negatively perceived disability-related events were the greater lengths of time needed to perform household and parenting tasks, the inability to participate in family activities, the inability to prepare a meal, and a child's lack of help when requested. Although parents rated these first three events overwhelmingly as negative, the events related to family involvement in household chores were of mixed valence. It will be worth comparing this negotiation of household chores between military families with parents with and without physical disabilities. It is unclear from the research whether upon reunion, the tricky reestablishment of household routines and balance of power in military families (Basham, 2008; Faber et al., 2008) may be complicated or eased if the returning parent is unable to physically perform previous household roles and responsibilities.

In the second study, experienced negative disability-related events were consistently related to weaker feelings of parenting self-efficacy, lower adolescent self-esteem, more adolescent externalizing behaviors, and greater parent and adolescent anxiety and depression. These findings are consistent with earlier studies that correlated stressors with symptomatology (e.g., Doyle et al., 2002; Felner et al., 1983), yet extend the research to negative events specific to parental physical disability and to measures of parenting self-efficacy and adolescent self-esteem. These results also support the validity of the PDEP-P and PDEP-C as measures of stressors for these family members.

Similar to findings of other life events research (Compas et al., 1989; Doyle et al., 2002), adolescent reports of total frequency of negative events were significantly related to self-reports, but not parent-reports, of internalizing problems and low self-esteem. Possibly, these associations are due to shared reporter method variance. Alternately, symptoms of depression, low self-esteem, and anxiety are primarily

cognitive rather than behavioral and, thus, may be relatively difficult to observe by others, especially if the child chooses to conceal them.

The finding that parent reports of negative disability-related events were correlated with both parent and adolescent reports of psychological adjustment indicates that not all associations between events and adjustment can be explained by shared reporter method variance. Instead, there may be an interdependence between parental negative events and adolescent emotional distress that is not evident between adolescent negative events and parent adjustment. This concurs with other research that suggests that parental physical disability can disturb adolescents and other family members as much as, or more than, the parents themselves (Kelley et al., 1997; Olkin, 2004). Similarly, parental psychopathology and life stress predicts child symptomatology in children from military families (Jensen, Bloedau, DeGroot, Ussery, & Davis, 1990).

Interconnections also are evident in the significant associations between parents' perceptions of severity of disability and number of mobility limitations with their own and their children's symptomatology. Consistent with previous research (Kelley et al., 1997), these correlations indicate that mobility restrictions constitute additional stressors with which parents with disabilities and their children need to cope. This implication is bolstered by the frequency of limitation-related events among the most commonly endorsed negative events of both parents and adolescents. Also, although the two measures of physical disability were not correlated with each other, both may represent appraisals of negative disability-related events to which the family must adjust. Parents and children may interpret disease severity and mobility limitations with alarm, as they worry not only about current losses, producing symptoms of depression, but also what they may signify for the future, triggering symptoms of anxiety.

Although there were no gender differences in adolescents' experiences, age differences are important to note. Older adolescents reported more specific and a greater total number of disability-related events, both negative and positive, than younger ones. This difference may be caused by greater responsibilities and parental expectations with age. Also, older adolescents may be more attentive to environmental events and more sensitive to their impact on themselves (Larson & Ham, 1993) and their nondisabled parent. Similarly, adolescents whose parents are deployed typically assume family responsibilities and often become acutely aware of changes in the nondeployed parent (Huebner, Mancini, Wilcox, Grass, & Grass, 2007).

In sum, the present research indicates that parents with physical disabilities and their adolescent children experience many more positive than negative disability-related events, illustrating the social model of disability concept that "disability is not inherent" though "a disability condition may be evident" (Pledger, 2003, p. 282). However, as Felner et al.'s (1983) transitional events model would predict, stressful life events do place parents with acquired physical disability and their children at risk; frequency of negative, but not positive, events is linked to greater internalizing and externalizing symptomatology and poorer positive adjustment in both parents and their children. These results have important implications for

prevention and intervention with civilian and military families. Health professionals and lay counselors need to convey that positive disability-related events predominate, normalize relevant negative experiences as typical of many families, and teach skills for coping with stressors and the psychological symptomatology, lower self-esteem, and decreased feelings of parenting efficacy that may accompany them. Parents with physical disabilities may adjust better by disconnecting their image of effective parenting from speed of task completion; both they and their children would likely benefit by adolescents' greater assistance with household tasks. Also, because many of the same events were perceived differently by participants, cognitive training that encourages parents and adolescents to appraise disability-related events less negatively may decrease undesirable outcomes. Lastly, because many negative disability-related events are related to limitations of physical mobility, parents and adolescents may need to learn to accept circumstances beyond their control.

Directions for Research on Military Families and Disability

Compared to disabilities caused by illness and by accidental injuries among civilian parents, the physical consequences of war injuries may be as or even more demanding. During the most current conflicts of Operation Iraqi Freedom and Operation Enduring Freedom, blinding injuries and blast injuries, with their attendant risk of late complications and infections, have increased substantially and have proved particularly difficult to manage medically (Gawande, 2004). Body armor, medical advances, and rapid evacuation procedures have allowed more service members in Iraq and Afghanistan to survive with these and other types of major injuries that would have been fatal until recently. A significant number of these casualties have severe extremity wounds that require amputation of a limb (Vreeman, 2006).

Cozza et al. (2005) speculate that the psychological consequences of military disabilities may be quite challenging. Although progressive illnesses often include psychological symptoms, such as the cognitive impairments of MS (Fraser & Stark, 2003), parent and child adjustment to military service-related disability is likely to be more complicated for numerous reasons. These include the intentional and aggressive origin of most war injuries, stressful events unique to military families, such as deployment-related separations and reunions (Lincoln, Swift, & Shorteno-Fraser, 2008), and the likelihood that the returning service member is suffering symptoms of psychiatric illness, such as post-traumatic stress disorder (PTSD), anxiety, and depression (Association of The United States Army, 2007). Male veterans with high levels of symptoms of PTSD, avoidance, and emotional numbing have been found to be at risk for reporting poor parenting satisfaction (Samper, Taft, King, & King, 2004). In addition, injuries that lead to disfigurement, such as those due to burns, blast wounds, and amputation may set into motion negative events related to appearance and public reaction. Both veterans and family members with pre-existing social anxiety may find these stressors particularly difficult to cope with (Kent & Keohane, 2001). Parents with amputations and their families

also may need to adjust to prosthetics and other orthopedic devices that affect mobility and quality of life.

There are likely to be some special challenges to conducting research with military parents with disabilities and their spouses and children. Because military veterans with physical disabilities are more likely to report mental health disorders than those who return from conflict nondisabled (Argyropoulos et al., 2005; Ismail et al., 2002), researchers may need to control for preexisting psychological symptoms when studying the effects of negative disability-related events on adjustment; longitudinal research using procedures such as path analysis may be able to calculate these variables' separate and combined contributions to mental health. Yet studying parental disability among service families will likely include difficulty of long-term follow-up due to transience, an important loss if many disability-related experiences, both positive and negative, are not realized until after the parents have left the military. Also, in comparison to Active Component members and their families, those in the Reserve Component and National Guard may encounter a greater number of disability-related events, such as those related to significant income loss and weaker integration into military support networks (Faber et al., 2008; Lamberg, 2008). Lastly, in all three military populations, it will be essential to explore whether there are any unique positive disability-related events upon which clinicians and prevention specialists can build, such as an expansion or intensification of relationship networks within or outside military communities.

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Chapter 13
Working with Combat-Injured Families Through the Recovery Trajectory

Stephen J. Cozza and Jennifer M. Guimond

Abstract Combat injury can profoundly affect the children and families of service members. The range of experiences for these families varies depending the specific injury type, severity, and recovery trajectory; composition of the family; developmental age of the children; preexisting parent, child, or family characteristics; as well as the longer-term functional impact on the injured parent. Following the injury children and adolescents may display distress, emotional or behavioral problems, risk-taking behaviors, increased helpfulness within the family, or motivation to participate in community service. The impact on children is influenced by the capacity of both the injured and noninjured parents to cope effectively, maintain effective parenting, and help the child adjust to changes in family relationships and circumstances. Interventions with combat-injured families should focus on reducing distress, supporting healthy child and parent functioning, and encouraging constructive communication within families and with service providers about the injury.

Introduction

By January 2010, over 35,000 soldiers, sailors, marines and airmen were injured in Operations Iraqi Freedom and Enduring Freedom (U.S. Department of Defense, 2010). Forty-three percent of U.S. military service members have children, averaging approximately two children per parent (U.S. Department of Defense, 2007), suggesting that over 30,000 military children have been affected by parental combat related injuries. It is likely that many other children have been affected by the injury of their service member siblings, cousins, or other close relatives or family friends, as well.

The range of combat injury family experience varies, depending upon the time from the original injury, the specific injury type and severity, the composition of the

S.J. Cozza (✉)
Center for the Study of Traumatic Stress, Department of Psychiatry Uniformed Services University of the Health Sciences, Bethesda, MD 20814
e-mail: scozza@usuhs.mil

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family, the developmental age of the children, preexisting parent, child, or family characteristics, the course of required medical treatment, as well as the longer-term functional impact (if any) on the injured parent. Case reports have described the impact of combat injury on military children (Cohen et al., 2006; Cozza, Chun, & Miller, in press; Cozza, Chun, & Polo, 2005). The effects on families and on children in particular are complex. From the initial distress to longer-term injury adjustment challenges, children and families face difficult emotional and practical problems.

The injury recovery trajectory can be conceptualized within four phases: acute care, medical stabilization, transition to outpatient care, and long-term rehabilitation and recovery. During acute care, life-saving and life-sustaining medical interventions are provided in combat theater. Medical stabilization includes definitive tertiary medical/surgical care that prepares the service member to function or be cared for outside of a hospital environment. Transition to outpatient care begins prior to discharge, as follow-up care and ongoing rehabilitation is planned. Rehabilitation and recovery is the longer-term period in which service members continue to progress and learn to adapt to their injury and settle into their new lives. During this phase, families often must transition to new communities and engage new health-care providers.

The injury recovery trajectory may involve alternating periods of medical stability and instability when complications occur, recovery progress is limited, or additional treatments are needed (Halcomb & Davidson, 2005). For example, multiple reconstructive surgeries may be required or a limb that is not regaining function despite rehabilitation may be amputated at a later date. Continuity of care for combat injury may be complicated by multiple transitions in care facilities, resulting in changes in family living arrangements and disruptions in community connection (Chesnut et al., 1999). Since many war-related injuries are extensive, the care of patients can be time consuming, often requiring months to years of recurring hospital-based treatments, as well as outpatient rehabilitative services.

In short, the impact of these experiences over time on injured service member families and children is profound. This chapter reviews information about combat injury, its immediate and longer-term impact on families and children, and interventions that may assist the family in injury recovery.

Nature and Impact of Injuries on Service Members

The most common causes of physical injuries in the current OIF and OEF conflicts are blasts and improvised explosive devices (Owens et al., 2008). Combat injuries can include but are not limited to musculoskeletal injuries, spinal cord injuries, disfigurement, amputations, burns, and visual impairment. Service members may also suffer from “invisible” injuries, such as traumatic brain injury (TBI). In addition to moderate or severe TBI, scientists have voiced concern about the impact of milder forms of TBI that may not come to medical attention, but can result in symptoms, dysfunction or sense of ill health (Warden, 2006). When mild TBI is co-morbid

with other physical injuries, families may contend with a parent who exhibits cognitive or personality alterations as well as physical injury.

Serious physical injury may be compounded by development of co-morbid psychiatric problems (Zatzick et al., 2007). Longitudinal data suggest that combat-injured service members are at significant risk for developing complicating psychiatric problems such as PTSD and depression (Koren, Norman, Cohen, Berman, & Klein, 2005; MacGregor et al., 2009). Mental health symptoms may present a variable course, resolving or worsening during the first year after hospitalization. In one study, nearly 80% of those combat-injured service members who screened positive for either PTSD or depression at 7 months postinjury screened negative for both conditions at 1 month (Grieger et al., 2006), suggesting that the population's mental status likely changes throughout the recovery period. Assessment of mental health early in the medical stabilization period does not adequately predict psychological problems later in the recovery trajectory.

Impact of Parental Distress on Children

Parental emotional distress, whether related to parental mental or physical illness, has been shown to constitute an important risk for poor adjustment in children (Beardslee, 1984; Lester, Stein, & Bursch, 2003; Rutter, 1966). Stressful life events in the family are often associated with higher rates of mental health symptoms and negative outcomes for children (Beardslee & Wheelock, 1994; Coyne & Downey, 1991; Dohrenwend & Dohrenwend, 1981). Evaluations of the risk of parental emotional distress for the child have shown that the psychosocial disturbance within the family, especially the child's exposure to parental irritability, aggression, and hostility, are most predictive of poor child adjustment (Rutter & Quinton, 1984).

Children and their parents tend to respond to each other's stress, and parents may model particular stress responses to their child. Significant associations between child and parent self-reported symptoms following psychological trauma have been described (Breton, Valla & Lambert, 1993; Laor et al., 1996; Sack, Clarke, & Seeley, 1995). Others have proposed that symptom contagion across the family may occur following trauma (see Pfefferbaum, 1997, for review). In the setting of a natural disaster, McFarlane (1987) found that separation from parents immediately following the event, negative changes in family functioning following the trauma, and maternal preoccupation were more predictive of poor childhood adjustment than either direct exposure to the event or bereavement. In contrast, healthy family relationships have been identified as protective for children in traumatic situations in other contexts (Kinzie, Sack, Angell, Manson, & Rath, 1986; Pynoos & Nader, 1989).

Similar intrafamilial forces are likely to be exerted in combat-injured families. Family functioning is central to the child's response to parental illness (Anthony, 1970; Armistead, Klein, & Forehand, 1995; Finney & Miller, 1998; Korneluk & Lee, 1998). Factors that support family health, such as greater availability and involvement of friends and extended family members or the continuity of previously

established family routines are likely to ameliorate negative consequences. A family's capacity to maintain structure, to provide emotional support, and to diminish distress all appear to help children adjust to parental illness or injury. As with most family stresses, children's responses tend to mirror the distress and functional capacity of the important adults in their lives. Whether the seriousness of the injury or resultant parental disability has more or less influence on child functioning and emotional response is less well understood. In either case, these findings highlight the importance of adopting intervention models that reduce distress and improve family and parental functioning when parental health problems exist, in order to support the health and wellbeing of children.

Impact of Parent Illness and Disability on Children

While little literature exists that systematically examines the impact of parental combat injury on military children, literature on parental illness and disability can inform our understanding of this population. One large-scale study indicated that children of disabled parents are at greater risk for behavior problems (LeClere & Kowalewski, 1994). Studies have shown that children of parents with multiple sclerosis (MS), compared to children whose parents have no disability, have more parent-reported internalizing and externalizing problems (Diareme et al., 2006) greater somatization and lower life satisfaction (Pakenham & Bursnall, 2006), and higher levels of distress as well as greater difficulty in relating interpersonally and in managing their lives (De Judicibus & McCabe, 2004).

Sudden health-altering events, such as stroke, automobile accidents, and combat injury, are likely to have different effects on children and families than parental illness (Visser-Meily, Post, Meijer, Maas, et al., 2005). Of the few studies that have examined the impact of sudden medical events on families, those related to TBI are most instructive for this discussion. TBI often results in profound impact on the child and the family, as the noninjured parent assumes the burden of caregiving (Verhaeghe, Defloor, & Grypdonck, 2005) and is at high risk for depression and anxiety (Kreutzer et al., 2009; Ponsford, Olver, Ponsford, & Nelms, 2003). According to Urbach and Culbert (1991) psychiatric sequelae associated with TBI tend to be more distressing to family members and disruptive to family functioning than other physical and nonneurological impairment. The most troublesome conditions include personality alterations, behavioral dyscontrol, erratic emotional expression, irritability, anger, apathy, and lack of energy.

In a study relying on retrospective noninjured parent report, children from TBI families displayed increased acting out behavior and emotional problems following the parental injury (Pessar, Coad, Linn, & Willer, 1993). In qualitative studies, children have reported feelings of loss and grief at the change in the injured parent (Butera-Prinzi & Perlesz, 2004) and a sense of isolation (Charles, Butera-Prinzi, & Perlesz, 2007). One study that included families in which the TBI occurred before the child's birth found no difference between children with a TBI parent and nondisabled parents (Uysal, Hibbard, Robillard, Pappadopulos, & Jaffe, 1998),

suggesting that it is the adjustment to the changed parent that is most distressing. Factors related to impact on children include TBI symptom severity, chronicity, and stability; preexisting parent, child, and family functioning and relationships; children's developmental level and sex; family cohesion, adaptability, resources, and conflict; and degree of disruption to routine, residence, and household composition (Urbach, 1989; Urbach & Culbert, 1991; Verhaeghe et al., 2005).

Armistead et al. (1995) hypothesized that the impact of parental physical illness on child functioning is mediated by disrupting parenting. In their model, parental physical illness directly and indirectly disrupts parenting through increased relationship conflict and parental depression. There is significant support for this model in the parental illness and disability literature. Elevated levels of emotional and behavioral difficulties in children of TBI patients correlate with compromised parenting in both the injured and noninjured parent as well as depression in the noninjured parent (Pessar, et al., 1993). Among children of parents suffering from a stroke, parent-reported internalizing symptoms and child-reported depressive symptoms have been associated with caregiver strain and depression (Visser-Meily, Post, Meijer, Maas, et al., 2005), with prior child depression as well as depression and martial dissatisfaction in the well parent contributing to greater risk (Visser-Meily, Post, Meijer, van de Port, et al., 2005). Among children of parents with MS, parental impairment was associated with child internalizing symptoms and family functioning was associated with child externalizing symptoms (Diareme et al., 2006).

Impact of Combat Injury on Children and Families

It is likely that the effect of combat parental injury on children is more complicated and potentially more challenging than nonviolent and accident-related parental injuries. No scientific investigation has yet systematically and directly measured the responses of children to parental combat injury over time. However, one small cross-sectional study found that the degree of family disruption following the injury (e.g., change in discipline, less time with parent), as well as preinjury family distress, were related to child and family distress in the first few months following the injury (Cozza et al., 2010). Clearly, more research is needed in this important area.

It is expected that all family members are likely to show some level of distress due to the sudden injury of a military family member. Clinicians have anecdotally reported that while most children do not initially demonstrate symptoms consistent with actual psychiatric disorder, many appear anxious, saddened, or troubled by the news early on (Cozza et al., 2005; Cozza et al., in press). Parents do not always accurately recognize the emotional impact of the parent's injury on children. This is to be expected, as prior studies show that parent reports alone are not reliable in the determination of child behavioral and emotional problems and that cross-informant input from others, to include children, is required for accurate assessment (Achenbach, McConaughy, & Howell, 1987). Throughout the literature, children who have been exposed to psychological trauma report different and much higher

levels of clinical symptoms than do parents, again highlighting the importance of direct child assessment for accurate evaluation (Meiser-Stedman, Smith, Glucksman, Yule, & Dalgleish, 2007).

Developmental Considerations

A developmental perspective is critical when considering responses of children to parental injury. For example, while infants and toddlers (0–2 years old) may be assumed to have little cognitive capacity to appreciate their parents' injuries, they will respond based upon changes in schedule and routines of their lives, the physical and emotional availability of important adults, as well as any changes in the emotional tenor (anxiety, interpersonal abruptness, irritability) of their households. If the combat injury severely disrupts the capacity of the noninjured parent to care for an infant, the young child may evidence problems in sleeping or eating, or may develop irritability or regulation problems or disturbance of attachment.

Young children (3–6 years old) have greater awareness of the actual nature of the injury. However, this understanding is likely to be undeveloped and fragile. Young children use *magical thinking*, an immature cognitive process characterized by age-appropriate self-centeredness, which can lead them to inaccurately assume responsibility for events that occur. Young children's cognitive processes may become even less reality based at times of high anxiety, as occurs after a parent's injury. Not uncommonly, preschoolers who see their seriously injured parents become disorganized and extremely anxious. They may wonder, "If this powerful and important person in my life can be hurt in this way, what could potentially happen to me?" (Cozza et al., in press). They may worry that the injury is punishment for something that they or their parent did wrong. Preschoolers are likely to demonstrate distress through regressive behaviors, loss of previously established developmental milestones (such as enuresis or new sleep problems), clinginess, and tantrums.

Older children have more mature developmental capacity. Still, the school-aged child may harbor similar anxieties. Fear in combination with a sense of guilt and a desire to take responsible action can complicate the school-aged child's response. Not surprisingly, children can be confused about expectations about how to act, especially toward the injured parent. They may not understand what is or is not appropriate and may feel uneasy bringing up questions (Cozza et al., in press).

Teenagers are faced with unique developmental challenges related to parental injury. At a time when teens are expected to become more independent and less reliant on family, they can be confused by a sudden need to once again be intensely involved due to fallout from the injury. Given their near-adult capacity, teenagers may also be asked to shoulder some of the greater demands that result from parental injury, including increased chores, care for younger children, or assistance in the care of the injured parent. Teenagers may be ambivalent and may voice their wish to be with their friends, rather than spend time with their family. Apparent lack of interest in a teenager should not be construed as apathy, but rather an attempt to cope with this developmental conflict (Cozza et al., in press).

Children with preexisting emotional, behavioral, developmental, or medical conditions of their own require close monitoring. Clinicians can expect that the stresses associated with parental injury may lead to greater distress or worsening of underlying conditions in more vulnerable children. Health-care providers should maintain a lower threshold for referral to appropriate clinical resources. When families that have children with preexisting conditions move to be within the vicinity of military hospitals where injured parents can be treated, discontinuity in children's health care can result. Given any family's urgency to address the medical needs of an injured parent, children's health care or educational needs can be neglected or inappropriately delayed.

Impact on the Family System

In addition to the direct effect of the physical injury, children can be impacted by the psychological and cognitive effect of these injuries on service members and resultant changes in family roles, including parenting. Injuries can impact a service member's capacity to feel comfortable in intimate relationships and may create distance between marital partners or close friends. Since the vast majority of injured service members are young men, it is important to recognize the potential for a negative impact on sexual competence or sense of virility with resulting impact on spouses and children.

Prior to the injury, many young military service members were physically active individuals who incorporated such traits in their parenting activities. Physical activities (hiking, backpacking, and camping), hands-on activities (playful wrestling), and athletic activities (ball throwing, skiing, and golfing) were all likely modes of interaction for young military fathers with their children. Depending upon the nature of the injury, those modes of engagement either may no longer be possible or may require significant modification in order to continue. When profound alterations in parenting activities are necessary, injured service members must modify a previously held, idealized sense of themselves as parents and mourn any related body change or functional loss. Parental physical absence due to hospitalizations and emotional unavailability due to physical condition or treatment effects can seriously limit any parent's ability to effectively interact with his or her children (Kelley & Sikka, 1997; Kotchick, Summers, Forehand, & Steele, 1997; LeClere & Kowalewski, 1994; Peters & Esses, 1985; Power, 1979).

Experience of the Children and Families in the During Medical Stabilization of Combat Injuries

Cozza et al. (in press) have described the early experience of injury for the family. When the family is notified, children may witness the response of their nonservice member parents or other adults, who may become extremely distressed, tearful, or

emotionally volatile. Such raw adult emotional response can be both confusing and overwhelming to children, challenging their own sense of safety. Once the family has been notified of the injury a period of intense activity typically follows, often leading to disruptions in the family's schedule or structure. Spouses usually join injured service members being treated at military hospitals, which are often great distances from the family home. At the hospital the noninjured spouse is often inundated by the requirements they face and must learn to navigate the medical environment and military system while being available to their injured spouse. Children may accompany noninjured parents, stay in or near their own homes with other adults, or move to live with relatives in distant places for extended periods of time. In some cases, families must split the children, due to age, logistical requirements, or custody agreements, resulting in separation from their siblings, adding to their distress. In some cases, children may not be able to visit their injured parent in the hospital for some time.

When children first see their injured parent they may experience a broad range of emotions that can be confusing both to themselves and to the important adults in their lives. Some children may be hesitant, fearful, distressed, and reluctant to show affection to the injured parent. As a result, some injured service members express feelings of hurt or disappointment, which can complicate the parent–child relationship. Children may feel betrayed by an adult's promise that the service member will return home safely and express confusion and anger toward the caregiver, other adults, or authority in general. Some blame others for their parents' injuries or feel guilty as if somehow they are responsible. These responses can fluctuate in character and intensity and are generally mingled with feelings of relief and gratitude that the service member parent is alive and safe.

In the hospital setting, staff and family members may have behavioral expectations for young children that are unrealistic (e.g., preschoolers sitting quietly for extended periods of time). Adults may react to loud and boisterous behavior with frustration and unnecessary harshness. Children who get negative feedback from parents or hospital staff members may feel that they are not wanted. However, children are important members of military families and identification and attention to their unique developmental needs is critical to helping them cope with difficult situations.

Family constellations may be complicated or nontraditional. Child and family distress may be compounded by conflicts between spouses, ex-spouses, girlfriends, boyfriends, and parents of the injured service member in the hospital setting. In young service members with serious injuries, disagreements can develop between service member's mothers, who respond to the regressive needs of their incapacitated sons or daughters, and young spouses, who can feel like intruders to the parent–child relationship. Assistance in negotiating communication and visitation may be needed. Spouses may question their commitments to service members who are permanently altered by the injury. Preexisting marital problems may be amplified in the injury recovery process. Marital dissolution and divorce are not rare.

Child and Family Considerations through Outpatient Transition, Rehabilitation, and Recovery

Some data suggest that injured service members may become more vulnerable as they transition back to their homes and communities (Grieger et al., 2006). When families leave the hospital setting they no longer have the intensive resources that were available. They can lose connection with the families of other injured service members with whom they may have developed a sense of fellowship and camaraderie. Families may struggle with the realities of being home and having to face responsibilities and routines that no longer seem manageable. Many injured service members require continuing medical or rehabilitative care. Access to needed services can be problematic or may require the scheduling of appointments at treatment facilities that are at great distance from home, adding more stress to family routines.

As the injured service member prepares to leave the hospital, children and other family members may expect a return to the life they remember. They may become disappointed with changes that they experience in the family. Older children and teenagers may have to pick up additional household responsibilities that the injured parent is no longer able to perform. When children are placed in a care provider role to the injured service member, emotional challenges can be even greater. Teens may be asked to assist with wound care, self-care, or other activities of daily living that require intimate contact with the parent that can be confusing, emotionally upsetting, and lead to resentment and frustration.

Finally, longer-term consequences of severe combat injury can result in medical retirement from the military service, the loss of a cherished military career, and movement from homes in military communities to other locations or back to families-of-origin. While such transitions may increase access to available resources, particularly when the extended family is supportive, these changes are likely to be stressful for both adults and children. Moves from known communities likely mean loss of friends, changes in schools, and possible elimination of enjoyable extracurricular activities. Moves also can cause relocations to communities that have little understanding or appreciation of military culture and the unique challenges that the family has faced.

Discussions with Combat-Injured Families

When significant changes in parental ability result from injury, parents and children must renegotiate family relationships and integrate the reality of the injury, whether physical, psychological or both, and its consequences. Focus groups conducted by these authors with 14 combat-injured families identified consistent themes to long-term injury impact (Cozza, Schmidt, Guimond & Feerick, 2009). Although it had been 1–5 years since the initial injury, most service member's continued to experience physical problems and posttraumatic stress related to their injuries, and high

distress among all family members was universal. Families reported ongoing anger, anxiety, shame, and sadness as well as increased risk-taking behaviors (e.g., excessive alcohol consumption, prescription drug abuse, reckless driving, and compulsive spending) particularly in the service member, but occasionally in other family members as well. Disappointment with service delivery and care was also evident, with transitions from military to Veterans Administration (VA) or civilian care being particularly problematic.

In many cases within this sample, family roles were disrupted, as some service member's with TBI remained impaired and unable to resume full parental and household responsibilities. Children were often given adult responsibilities and their reactions ranged from pride to resentment. Parents recognized the burden they placed on their children and expressed guilt about it. Strained relationships between parents and children and between spouses were reported. Adolescents, in particular, struggled with trying to be "normal" teenagers during a time when many families needed them to be adults (Cozza et al., 2009).

Communication with children about the injury varied widely. Some spouses were able to clearly explain the injury and behavioral changes in the injured service member to their children, whereas others struggled to find the appropriate words. Although many children identified their injured parent as having TBI or PTSD, few could clearly explain what the terms meant. Most family members reported reluctance to discuss their current challenges with each other (Cozza et al., 2009).

Families stressed that health care was most effective when it was family centered. Noninjured parents expressed a need for more involvement of family members with medical personnel, greater involvement in the rehabilitation process, and services for themselves and their children. Families also discussed the need for information about recovery trajectories. In the midst of these challenges, families also evidenced strengths. They described appreciation of and commitment to each other. Injured service members, spouses, and adolescents also recognized the stressors and difficulties faced by the others. Several adolescents voiced expectation for family growth as a result of the injury experience and hopefulness for the future (Cozza et al., 2009).

Intervention with Combat-Injured Families

To date, there is no research on interventions for children and families of combat-injured service members. An expert panel of professionals recently identified the three most important elements of intervention with this population: (1) reducing individual and family distress, (2) supporting child, parent, and family functioning, and (3) ensuring effective communication among family members and with other professional and personal contacts outside of the family as related to combat injury experience and recovery (Cozza, 2009). This latter concept has been termed *injury communication* and is discussed below in greater detail. These three principles serve to guide intervention strategies starting with hospitalization and throughout the later stages of injury recovery.

The literature on parental illness and disability can inform our intervention recommendations. Studies of family-based interventions for adult relatives have been shown to improve functioning and outcomes in individuals with TBI, chronic illness, and their family members (see Dausch & Saliman, 2009; Martire, Lustig, Schulz, Miller, & Helgeson, 2004, for reviews), suggesting that family-based care is likely to benefit the injured service member as well as other family members. In these studies, the most promising therapies included psychoeducation, skill-building, and family strengthening.

In the limited literature on interventions for children, McLaughlin (1992) described an activity group model for children aged 6–13 years with brain-injured relatives. The group uses hands-on interaction with medical and rehabilitation equipment in physical and occupation therapy settings to teach children about brain injury and rehabilitation. The group also serves as a supportive outlet for children to discuss changes in their parents and other pertinent topics. However, no evaluation of the group is provided. Behavioral parent training in individuals with a brain injury was evaluated in one small multiple baseline study (Ducharme, Spencer, Davidson, & Rushford, 2002). Results indicated increased compliance in oppositional children and increased self-esteem in the parent. The authors hypothesized that the intervention led to a more positive interaction style, characterized by increased warmth and approval from the parent, which facilitated restoration of the parent-child bond.

Psychological First Aid

Psychological First Aid (PFA) is an evidence informed intervention for early to mid-level mass trauma recovery (for review, see Hobfoll et al., 2007) that is particularly relevant to combat-injured families. Five key principles of PFA intervention emphasize (1) establishing a sense of safety, (2) promoting calming through distress reduction, (3) building a sense of self- and community efficacy, (4) fostering connectedness, and (5) promoting a sense of hope. These PFA principles can best be implemented with children of the combat injured on three levels: (1) community-based programs (e.g., peer mentoring and support groups, family assistance programs, parent guidance, and respite programs), (2) family and parentally administered support, and (3) coordinated clinical care for those children considered at higher risk or exhibiting symptoms of a disorder. Clinicians can provide consultation to parents, other family members, hospital personnel, and other service providers in PFA.

These principles must be applied in a developmentally appropriate manner. For example, maintaining daily routines and physical proximity to a trusted adult are essential in establishing feelings of safety in infants, toddlers, and preschoolers. At the other end of the developmental spectrum, older children and adolescents may need a sense of control, which they attain through knowledge, understanding, and constructive action, to feel safe.

In addition to attending to safety, preschool children (3–5 years old) may have unique requirements for managing distress. Their lack of cognitive capacity to fully understand the situation or to describe their feelings necessitates nonverbal outlets. Young children gain mastery through play, practice, and repetition. Playing with toy hospital equipment or military-related toys can help children become more comfortable with the experiences of their parents. One resource developed specifically for children at this age is the Sesame Workshop's *Talk, Listen and Connect* series of DVDs and print materials (available at http://www.sesameworkshop.org/initiatives/emotion/tlc).

Whereas younger children's primary needs for connectedness revolve around family, preadolescents and adolescents also rely heavily on peer relationships for support. By permitting and facilitating regular contact with peers, adults allow children in these age groups to have a important outlet. The noninjured parent's connectedness to supportive family and community resources is also important for ensuring that parents can meet their children's needs.

Parents and hospital personnel can promote a sense of efficacy by providing children with opportunities to be helpful in a developmentally appropriate manner. For example, younger children can bring water to the injured service member and assist with simple activities of daily living. Older adolescents may also benefit from involvement in community-based service, such as promoting blood drives, supporting other children with combat-injured parents, or promoting causes important to military families. However, adults should ensure that these activities do not interfere with other age-appropriate activities.

Parent Guidance and Consultation in the Hospital Setting

Clinicians can begin assisting families early on by providing guidelines for children's hospital visits. Consultation to hospitals may include recommendations for communicating with children about the injury and hospital setting (see section on Injury Communication), creating appropriate areas for family activities that are "child and family friendly," allowing children to be present and involved in their parent's care, protecting children from unnecessary exposure to other injured service members, and advising parents regarding child visits.

Helping parents prepare children to visit a hospitalized parent is essential and often overlooked in the emotional and practical upheaval common to combat injury situations. Noninjured parents should initially visit the hospital without children, so that they can first integrate the experience themselves (Cozza et al., in press). In preparing a child for hospital visits, adults can explain what to expect during the visit, describe or show pictures of the injured parent and hospital setting, teach the vocabulary of the injury, reassure the child that the injured parent is still the same person, and discuss how the child might feel during the visit. It is important to use accurate language, rather than euphemisms, to avoid any misunderstandings (Cozza et al., in press). Noninjured parents can gauge the appropriate amount of injury related information (presence of bandages, casts, amputations, or medical equipment) and

mix the discussion with less anxiety-provoking topics such as descriptions of the hospital cafeteria, the kind of food that they can eat while in the hospital, or the hotel or living quarters. With proper planning most children will feel comfortable when the time for the visit arrives.

Children's visits to the hospital should be time limited and structured to ensure that they are beneficial experiences for them as well as for their parents. The noninjured parent should take cues from the child, refrain from forcing expressions of affection, and be prepared to leave if the child become frightened or bored. Allowing children to bring something for the service member (e.g., a drawing, photo, or flowers) may give them a sense that they are helping their parent feel better (Cozza et al., in press).

Guidelines for Effective Injury Communication

Given the confusion and fear associated with injury, combat-injured families face unique challenges that can compromise communication. *Injury communication* refers to the multiple requirements for effective communication about injury-related topics and information both within the family and with others in civilian and military communities (Cozza, 2009). Effective injury communication requires open dialog about the injury and its consequences between multiple parties: the injured service member and spouse, family members (to include children), friends, medical personnel, and other community professionals and service providers. When properly conducted, injury communication respects the delicateness of the high emotional valence of injury-related topics as well as the necessity of using developmentally informed language when communicating to children of different ages. Most importantly, effective injury communication changes to meet the needs of a family as they evolve and change over the course of hospitalization, recovery, and reintegration.

Sometimes the noninjured parent or other adults have trouble gauging what to tell their children. Adults sometimes struggle with their own emotional reactions, which may make communication particularly difficult. In their own distress, parents may not recognize what is appropriate to pass on to children. Some adults may choose to withhold important information related to serious injuries from children in an attempt "not to worry them." In such circumstances, clinicians need to challenge the assumption that such "secrets" can realistically be kept from children. Just as some parents may provide too little information about the injury, others share more than children are able to tolerate or may frighten them by unnecessarily bringing up unknown future consequences. Adults may need help processing and calibrating the amount, content, and timing of the facts that they share. Knowledgeable professionals should communicate that even young children should be given some explanation without causing them to become overly worried to help them understand the actions and emotions of the adults they see around them. The foundation of the clinician's helpful stance towards the families and children of the injured is to increase adult awareness and to help them notice and respond appropriately to children's emotional signals.

Offering reassuring yet realistic and consistent commentaries about a developing and uncertain situation are major objectives of communication early in the injury recovery process. Early injury communication recognizes the sensitivity of injury related topics and the importance of developmentally appropriate language with children. Later goals of injury communication include the need for family members to integrate the experience through a process of shared understanding. As different individual thoughts, feelings, and concerns may arise through injury recovery, ongoing dialog about the injury and its consequence is extremely important.

In circumstances when injuries lead to longer-term impairments, personality changes, or cognitive problems in parents, young children will need to be given simple and clear explanations of the behaviors they see (e.g., "Remember that I told you daddy's brain was hurt… sometimes he gets angry easily and he says things that he doesn't mean…but that is not your fault…even though he has trouble being in charge of himself, he still loves you.") School-aged children, who may inappropriately accept responsibility for problems that they come to see in their families, need to be reminded that they are not responsible for these problems and that it is not their job to "fix" them. With adolescents, parents must recognize the real conflict created by teenagers' developmental needs for independence and neither expect them to act like surrogate adults in the family nor abdicate the need to set appropriate limits on any risk-taking behaviors. The most important communication to children of any age is that, despite the news of the injury, they will be cared for and that important adults will remain available to them.

Effective injury communication will likely involve multiple parties: the injured service member and spouse, family members including children, extended family and friends, medical personnel, and other community professionals and service providers. Clear concise messages to people outside of the family can help others understand family member experiences and needs, without having to share too much unnecessary or personal information. Parents can help children speak with teachers, coaches, and other caring adults about the family injury, so they may better understand the behaviors they see in these children. Such knowledge will alert these adults to make themselves more available when needed. Connection to trusted health-care providers or community support providers makes it more likely that family members will seek help when needed. Parents and other trusted adults (grandparents, aunts, uncles, teachers, counselors, coaches, ministers, etc.) must remain available to support children through the injury recovery trajectory.

Family-Based Interventions

As combat injury disrupts family structure and functioning, a family-centered approach is needed to address the issues of children, spouses, and service members following combat injury. Based on clinical observations, the symptoms, functioning, and responses of family members change throughout the injury rehabilitation process, requiring longitudinal evaluation of the recovery trajectory and ongoing

care. Patient-centered approaches to care, focusing on evolving patient needs, are vital to the longitudinal management and healthy recovery of the traumatically injured (Zatzick et al., 2001) and can readily incorporate family requirements as well. Families are expected to need more help at various transition points (e.g., after initial notification of spouse injury, traveling to the hospital; after stabilization, moving from the hospital to a rehabilitation site, etc.). When the injury is serious, the recovery process is likely to be drawn out, requiring effective care management and interventions to be implemented across time and tailored to the specific needs of each family (Zatzick et al., 2001). Services should include longitudinal supportive engagement, assistance in identifying and connecting with needed resources, parent guidance, help with family problem solving and goal setting, ongoing risk assessment, and, when indicated, referral for clinical intervention.

In response to the lack of any identified interventions for combat-injured families, the authors, in collaboration with other colleagues, have developed a preventive intervention specific for this population. It is based on two models. The first, Families OverComing Under Stress (FOCUS; Saltzman et al., 2009), is a well-respected and evidence-informed preventive intervention program that has been successfully used with military families dealing with the impact of deployment. The second, Early Combined Collaborative Care (ECCC; Zatzick et al., 2001), focuses on the needs of traumatically injured patients as they move from the hospital to the community over time, incorporating shared patient–health-care provider treatment planning, the provision of long-term care management, and active sustained follow-up that promotes continuity in care delivery sectors.

This newly developed intervention, FOCUS for combat-injured families (FOCUS-CI) has seven core components: (1) family-focused care management, (2) emotion regulation skills, (3) psychoeducation; (4) injury communication, (5) problem solving, (6) goal setting, and (7) integration of skills. At its core, FOCUS-CI encourages longstanding trusting and helpful relationships with combat-injured families, so that any family needs are identified and addressed as they develop throughout the injury recovery trajectory. Family strengths are emphasized, and parents and children are encouraged to explore innovative, mutually developed activities and play that allow them to "try on" fresh ways of relating. The capacity for the parent–child dyad to reestablish enjoyable modes of interaction is critical to future health and happiness. Candid parental discussions can allow injured service member parents to reframe their situations, develop new skills, and to develop greater strength in parenting.

Conclusion

In summary, combat injury can profoundly affect the lives of service members, their families, and their children. Upon injury notification, a cascade of events takes place that can result in distress and interpersonal turmoil for children and adults in the combat-injured family. Disruption in parental functioning and family structure

are common, with immediate challenges leading to family disruption, unexpected separations, and long-term changes to parental functioning, cognitive capacity, and relatedness, as well as transitions from military to civilian community settings. Children's developmental and emotional capacities determine their ability to understand and integrate the experience of parental injury. Parents and health-care providers can benefit from developmentally informed guidance to help children with the injury. Family and child reactions to combat injury must be understood as a longitudinal process beginning with injury notification and continuing through longer-term rehabilitation. Intervention strategies should work to decrease distress, support effective functioning, and implement strategies of effective *injury communication*. Principles of PFA can support these goals. Family-focused interventions appear to be effective methods of engaging these vulnerable families through the injury recovery trajectory. Strategies for such intervention are currently being developed and studied.

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Part IV
Single Service Members

Chapter 14
Deployment, Reenlistment Intentions, and Actual Reenlistment: Single and Married Active-Component Service Members

James Hosek and Paco Martorell

Abstract The question of how military deployments affect the decision of whether or not to reenlist has received considerable interest from policymakers and researchers. An important yet relatively unexplored dimension to this issue is how the impact of deployment on reenlistment differs by marital status. This chapter develops a conceptual framework for explaining why the response to deployment might differ and then examines the response empirically. We find that the effect of deployment is typically positive, and that this effect is larger for married members. A notable exception occurs in the Army in 2006 and 2007, where we find sizable negative effects for marrieds and singles. A chief driver of the difference may be selection into marriage; military personnel who marry arguably reveal a relatively strong attachment to military life, which may be positively correlated with resiliency to the stress and risk associated with deployments.

Introduction

Approximately 15% of Active Component enlisted personnel enter the service married, and nearly 50% are married by the end of the first term. Married service members have an immediate source of social and emotional support in their spouse, but during an era of high deployment the regimen of military life and its demands on the time and commitment of the service member may fray the couple's relationship. Added to this, actual deployment overseas exposes the member to a variety of dangers, constrains communication back home, places much of the burden of maintaining the couple's household on the spouse, and generally can generate stress and anxiety for the couple. Single service members have a network of friends and family and may have people with whom they are close. These relationships, too, may be a source of support and yet may be strained by deployment.

J. Hosek (✉)
RAND National Defense Research Institute, Santa Monica, CA, USA
e-mail: jrh@rand.org

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Although the stresses deployments place on a relationship may manifest themselves in myriad ways, clearly a central dimension is whether service members decide to remain in the military, where they are subject to further risk of deployment. Despite the apparent difference in the social/emotional support structure of single and married service members as well as the seemingly greater potential for the propagation of stress and anxiety in a couple, previous studies of the effect of deployment on reenlistment have not considered whether deployment affects married service members differently than single service members. Our study is a step toward addressing this question.

The main purpose of the study is to determine empirically if the effect of deployment on reenlistment differs depending on marital status at the time of reenlistment. A secondary but important purpose of the study is to provide a conceptual framework for explaining why the response to deployment might differ, and a third purpose is to identify future work that could be done to further understand the difference. Given that many service members have been deployed for ground operations in Iraq and Afghanistan, some more than once, our analysis will hopefully provide insight into whether, by how much, and why married members are more resilient to the pressure of deployment, at least with respect to reenlistment.

Single and married Active Component enlisted service members, the focus of our analysis, have not had the same exposure to deployment especially since 2002. A simple measure of this is the percentage with 12 or more months of deployment involving hostile duty in the 3 years prior to the reenlistment decision. In 2007, for instance, this percentage was 57% for first-term single soldiers vs. 45% for first-term married soldiers, and 40% for first-term single marines vs. 33% for first-term married marines. Differences also existed for the Navy and Air Force but were quite small. In 2007, the percentage was 3% for single first-term sailors vs. 2% for married first-term sailors, and the same for second-term sailors.

The higher percentages for the Army and Marine Corps reflect their far-greater involvement in ground combat operations in Iraq and Afghanistan relative to the Navy and Air Force. This can be seen in Fig. 14.1, which shows the number of months deployed (conditional on having been deployed) in the 36 months prior to the first-term reenlistment decision. Starting in 2004, there is a clear increase in the average months deployed in the Army and Marines Corps while the Navy and Air Force saw much smaller increases. The increases were especially large in the Army, where deployments to Iraq and Afghanistan operations were initially 12 months long and increased to 15 months in 2006. In contrast, deployments were typically 7 months long in the Marines. Figure 14.1 also shows that, on average, married soldiers and Marines spent fewer months deployed than did singles. The fact that married soldiers and marines had less exposure to extensive (12-month-plus) deployment might contribute to deployment tending to have a smaller – less positive or more negative – effect on reenlistment than for single members. Because these differences in exposure partially arise from differential sorting by marital status into occupational specialties with differing deployment rates, we therefore control for military occupational specialty, allowing us to isolate the effect of deployment on single vs. married members "within" an occupation.

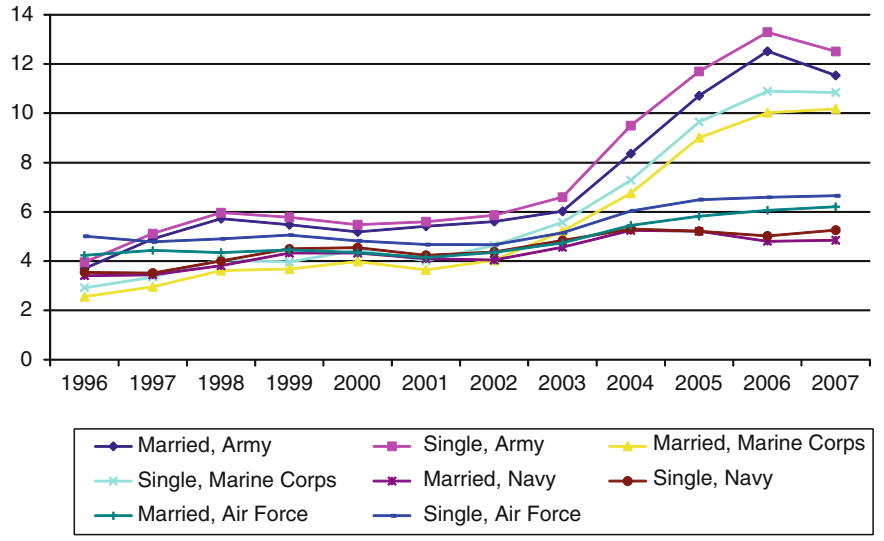

Fig. 14.1 Average months deployed in 36 months prior to reenlistment decision by marital status and service

Two key findings in our empirical analysis are that the effect of deployment is typically, but not always, positive, but this effect is larger for married members than for single members. The chief exception to the positive effect of deployment occurs in the Army in 2006 and 2007, where we find sizable negative effects for marrieds and singles. Through further analysis we attribute this negative effect to more extensive deployment of soldiers in these 2 years, i.e., to the higher cumulative months of deployment in the 3 years prior to reenlistment for soldiers with a reenlistment decision in 2006 and 2007. Our third key finding, then, is that cumulative months of deployment are critical in determining whether deployment has a positive or negative effect on reenlistment. Our fourth key finding is that although the effect of deployment is usually larger for married than for single members, the pattern of change in this effect from 1996 to 2007 is similar for married and single members.

Our data do not permit us to isolate the extent to which the difference in level, but similarity in change over time, trace to selection into marriage, support systems for single and married members, or differences in compensation and benefits. However, an argument can be made that the chief driver of the difference is selection into marriage. The basis for this argument is that the incentive to marry may be correlated with the individual's preference, or "taste," for the military and taste for deployment, and that benefits and deployment pay are higher for married members. Further, there is no reason to suppose that married members are less exposed to deployment and its risks, once military occupational specialty has been controlled. Instead, given a service member's branch of service, term of service, occupational specialty, and to some extent rank, the likelihood of deployment is independent of marital status, and our analysis controls for these factors.

The remainder of the chapter is organized as follows. We present a brief review of the literature, conceptual framework, description of our data, results from analyses of survey and administrative data, and then our conclusion.

Selected Literature

Our empirical analysis provides estimates of the effect of deployment on outcomes including higher-than-usual work stress, higher-than-usual personal stress, the intention to remain in the military, and actual reenlistment. Our brief literature review touches on studies of stress and performance in the military, the incidence of behavioral health conditions following deployment, effects on the family, and the effect of deployment on reenlistment.

Kavanagh (2005) reviews over 100 studies on stress and performance and their applicability to the military. Kavanagh identifies combat-related stressors (e.g., being ambushed or attacked, receiving hostile fire, killing enemy combatants, handling human remains, knowing someone who was injured, being injured, close quarters, civilians in the battlefield, hidden obstacles, intense firefights), environmental stressors (e.g., sanitation, lack of privacy, long work hours, heat, insects, fear of disease, lack of sleep), and family-related stressors (e.g., being away from home or family, uncertainty of return date, problems with spouse or children, financial matters at home). Stress is expected to cause perceptual narrowing leading to incomplete decisions, increased time to complete tasks, and oversimplification during problem solving. It may also lead one to yield control to others, decrease effective in-group communication, and induce groupthink. For instance, time pressures may result in focusing on fewer cues, loud noise may result in greater use of heuristics, sleep deprivation may causes decisional errors, and task overload may cause decrements in performance. However, moderate general stress has been found to increase job satisfaction, increase organizational commitment, morale, and group cooperation, whereas high general stress can reduce morale and unit loyalty. Long-term exposure to stress may lead to emotional exhaustion and burnout as well as to cardiovascular disease, muscle pain, decreased fertility, and stomach or intestinal problems. Stress exposure training is recognized as an effective means of moderating the effects of stress. This training involves three phases: the presentation of knowledge of typical stressors and reactions to stressors, the development of cognitive and problem solving skills and relaxation techniques to respond to stress, and practice in the use of the these skills when exposed to stress. In addition, group-level moderators can help to control the effects of stress. Group-level moderators include leadership skills (effective communication skills, motivation), unit cohesion, and team training, for example.

Deployment-related stress can affect behavioral health. The prevalence of "any mental health concern" in 2003–2004 was 19.1% among soldiers deployed to Iraq, 11.3% among those deployed to Afghanistan, and 8.5% among those deployed

elsewhere (Hoge, Auchterlonie, & Milliken, 2006). The prevalence of "any mental health concern" was positively related to departure from the military. About 65% of the soldiers reported any exposure to combat (Hoge et al., 2006) compared with about 90% of soldiers in 2007 (Castro, 2008). Approximately 19% of service members returning from deployment to Iraq or Afghanistan had symptoms indicative of PTSD (Tanielian & Jaycox, 2008).

Hosek, Kavanagh, and Miller (2006) find that deployment increases a service member's higher-than-usual personal stress and higher-than-usual work stress and decreases the intention to stay in the military. The effect of deployment on the member, spouse, and children (MacDermid, Samper, Schwarz, Nishida, & Nyaronga, 2008, survey and synthesize the literature) has led to interest in family resilience. Castenada et al. (2008) survey reserve spouses to learn about the challenges faced by the family when a reservist deploys and the support services needed. Savych (2008) finds that deployment reduces spousal labor force participation, more so for spouses with children under age 6. The absence of a parent on deployment may affect the emotional well-being and academic progress of children (MacDermid et al., 2008). Lyle (2006) finds that deployment causes a one-tenth of a standard deviation decrease in children's performance on standardized tests, an effect that may last for several years (Engel, Gallagher, & Lyle, 2006).

Past studies of the effect of deployment on reenlistment generally find a positive effect that diminishes as the cumulative amount of deployment time increases (Fricker, 2002; Hosek & Totten, 1998, 2002; Quester et al., 2006). These studies do not analyze whether the effect of deployment differs between single and married members.

Deployment related pay is similar for single and married service members with the exception that married members receive family separation allowance. These pays totaled approximately $800/month for single members and $1,000/month for members with dependents between 2002 and 2008 in constant 2006 dollars (Hosek & Martorell, 2009). From 1996 to 2001, they were approximately $600/month and $700/month for singles and members with dependents, respectively.

Conceptual Framework

We are interested in the effect of deployment on reenlistment and whether this effect differs between single and married service members. We first discuss the reenlistment decision of a single service member then extend the discussion to a married member, considering both the decision to marry and the decision of the married service member to reenlist. We develop the conceptual framework from an economics perspective but it has similarities to the theory of planned behavior in the field of psychology (Ajzen, 1985, 1991). We briefly state Ajzen's theory as a point of departure and then transition to our economic model.

In Ajzen's (1985, 1991) theory of planned behavior, the individual has behavioral beliefs about the consequences of an action, here reenlisting, including the occurrence of deployment and its related effects. The beliefs depend on the individual's perception of how friends, family, and other "influencers" judge this behavior (normative beliefs) and perception of social norms toward the behavior (subjective norm). Given the set of beliefs, the individual forms an attitude toward the behavior, i.e., a positive or negative evaluation of reenlisting. Based on beliefs and attitude, the individual forms a behavioral intention, and it is a precursor of actual behavior. The model allows for updating, and it recognizes that, in empirical work, intentions might not be followed by behavior if unobserved factors affecting beliefs and attitudes change after intentions are reported. An important element of the theory is control over being able to perform the behavior. However, this is not an issue here because the military gives the individual the opportunity to reenlist and the individual can choose to do so or not.

In our expected-utility model of reenlistment the individual forms an assessment of the expected utility of remaining in the military for another period vs. that of leaving. The expected utility of remaining in the military depends in part on current and future pay and on the value the individual attaches to his preference, or taste, for serving in the military. In our model the value of taste is constant over time for an individual but differs across individuals. With respect to the theory of planned behavior, taste could reflect the individual's enduring normative beliefs and subjective norm. Short-lived changes in normative beliefs, e.g., from various influencers, can be expressed in our model through the random "shock" term in each period. Our model does not explicitly relate the random term to any particular source such as an influencer. Once the individual has made an assessment of the expected utility of staying vs. that of leaving, the individual selects the higher of the two. The model does not have an intentions-formation step in the current period that precedes the action of reenlisting or leaving in that period. However, in the current period the individual can make an assessment of the expected utility of stay vs. leaving in any future period, the these future expected values could be thought of as reflecting current intentions regarding future actions. Like Ajzen's model, our model allows for updating; the individual re-optimizes in each period, given the realized circumstances of the period. Unlike Ajzen's model, our model imposes a specific structure on future uncertainty – the individual is assumed to know the distribution from which shocks are drawn. Knowing the distribution of future shocks, along with information about military pay, promotion probabilities, and civilian pay, the individual can make a current evaluation of the value of staying vs. leaving in a way that conditions on the individual acting optimally in each future period even though the specific circumstances of the future periods are not known today. In both the theory of planned behavior and our model, deployment can affect, respectively, the attitude toward, or expected utility of, remaining in the military. Deployment-related pay enters our model explicitly through a military pay term, and enters the theory of planned behavior implicitly. We now shift to the context of our model.

Reenlistment for an Unmarried Service Member

The condition for a single (i.e., unmarried) person to join or reenlist in the military is that expected utility of a term in the military is greater than or equal to expected utility outside the military as a civilian. For notation, $Vs(\mathrm{g})$ is a value function for a single person and $Vm(\mathrm{g})$ is a value function for a married person. The value of a term of service in the military for a single person equals the utility during the term plus the discounted value of the best (military or civilian) career move at the end of the term, allowing for how the training, experience, and rank gained during the term affect the career options.

$$Vs(M,S(t)) = (1-p)U(h,b) + p(EU(0,b+\upsilon d,d)+\nu)+\tau+\varepsilon + \delta E\ \mathrm{Max}(Vs(M,S(t+1)),Vs(C,S(t+1))).$$

Expected utility in the military during the term is an average of utility when not deployed and utility when deployed, where the latter allows for randomness in the length of deployment. Here, M = military, $S(t)$ = state at time t, p = probability of deployment during the term of service, h = service member time not on duty (i.e., at home), b = pay and benefits when not deployed, EU is expected utility when deployed (the expectation is taken over the random time of deployment), the zero reflects having no home time when deployed, υ = deployment pay rate per unit time, and d = deployment time. The state at time t depends on years of civilian experience, years of military experience and rank (and hence military wage), civilian wage, and marital status. The EU term includes d because the service member might derive utility directly from deployment. (It is not necessary to include a term for military duty time at home station as a direct source of utility because this is captured by time not on duty; a decrease in time not on duty is the same as an increase in time on duty.) We assume the service member has a preferred amount of deployment during the term that typically is positive but less than the full length of the term. EU is maximized when deployment time equals the preferred amount and allowing for the deployment pay that comes with deployment time. (The model can be extended to reflect the preferred amount of deployment jointly with the preferred number of deployments.) In addition, individuals differ in their preferences for the military and for deployment, and at the time of enlistment or reenlistment there may be unforeseen good or bad aspects about the military. To allow for this we add preference terms and a random shock term: τ = preference for the military, v = preference for deployment, ε = random shock, all relative to the civilian world. The *EMax* term is the expected value of the maximum of the choice at $t+1$ between remaining in the military or leaving to become a civilian, and δ = personal discount rate. In the expression above, the state in $t+1$ accounts for the accumulation of time in the military during the term. By the same token, the state in $t+1$ also recognizes that there was no increase in civilian experience.

The value of a term's length of time in the civilian world is

$$Vs(C,S(t)) = U(h,y) + \delta E \text{ Max}(Vs(M,S(t+1)),Vs(C,S(t+1)),$$

where h=home time and y=civilian income. An individual joins the military if $V(M, S(t)) \geq V(C, S(t))$. In this expression, the state in $t+1$ registers no increase in military experience but an increase in civilian experience.

A feature of the military is that one must enter at the bottom rung of the career ladder. From the perspective of a civilian thinking about entering the military, the preceding expression is appropriate. But for someone already in the military a simpler expression may be used. The military for the most part does not permit lateral entry, though some is permitted in the first term of service. Because lateral entry is not allowed after the first term, the relevant version of the civilian alternative for a service member at reenlistment is simply

$$Vs(C,S(t)) = U(h,y) + \delta Vs(C,S(t+1).$$

By similar reasoning, anyone who wants to join the military has an incentive to do so at a young age. This is because the wage rate in the civilian world typically increases with experience in the labor force, whereas the starting wage in the military is basically the same regardless of civilian experience. As a result, the foregone civilian wage when joining the military at, say, age 26 is greater than the foregone wage at age 18, but the starting wage in the military is the same at both ages. Becoming unemployed, or the fear of becoming unemployed, can also prompt a person to consider enlisting.

Using the above equations, reenlistment occurs when $Vs(M, S(t)) \geq Vs(C, S(t))$. This outcome is more likely the higher the preference for the military, preference for deployment, random shock, military pay and benefits when not deployed, deployment pay, and the effect of a term of military service on future opportunities, $Vs(M, S(t+1))$ and $Vs(C, S(t+1))$, relative to the effect of that amount of time spent instead as a civilian.

The actual amount of deployment may differ from the preferred amount. If the typical service member wants some deployment, then having none is a disappointment. Similarly, having some deployment but much more than preferred is also a disappointment. Holding the preference for deployment constant, either too little or too much deployment decreases *EU*, the expected utility when deployed, below its optimal value. It is also possible that the service member may update the taste for deployment if the actual deployment experience is much different than expected. But note that the taste for deployment need not change for too little or too much deployment in the current term to affect the expected utility of deployment in the next term. Rather, it is only necessary for the individual to update the mean and variance of the distribution of deployment over which the expectation *EU* is calculated. For instance, extensive deployment in one term might cause a reduction in *EU* for the next term because the individual adjusts his expectation of length of deployment in the future and not because the individual's taste for deployment has changed.

Reenlistment for a Married Service Member

To extend this framework to married service members, we consider the decision to marry and the decision of a married service member to reenlist. Both decisions are relevant to our analysis because we need to consider whether selectivity into marriage affects not only reenlistment but also the effect of deployment on reenlistment for married vs. single service members. We focus on marriage during a term in the military, although the analysis can be extended to marriage before joining the military. A key question in the analysis of marriage is how to represent the preferences of the married couple. We use a joint utility function with arguments for the home time of the husband and wife, the earnings of each, and as before we include an argument for deployment time when the member is deployed. To distinguish intrinsic gains from the marriage that may differ across couples, we also include the terms α and β for the service member and the spouse, respectively, where these terms are relative to being single. We assume these gains are not affected in the short run by whether the service member is deployed or remains in the military, or whether the spouse works. As with preference for the military and preference for deployment, the value of α and β may be different for different individuals. Finally, let γ be the spouse's preference for the military and let ω be the spouse's random shock term. In the more common case where the spouse is not a service member, γ reflects tastes for the conditions frequently associated with marriage to a member of the Active Component military (e.g., living on or near a base, moving frequently, access to military family support, support for military missions).

The value of a term in the military as a married service member is

$$\begin{aligned} Vm(M,S(t)) = (1-p)U(h,w,b,e) + p(EU(0,w,b+\upsilon d,d,e)+\nu)+\tau \\ +\alpha+\varepsilon+\delta E\ \mathrm{Max}(Vm(M,S(t+1)),Vm(C,S(t+1))), \end{aligned}$$

where w = spouse time at home and e = spouse earnings. A necessary condition for the service member to marry is $Vm(M, S(t)) \geq Vs(M, S(t))$. This is not a sufficient condition because the would-be married member might meet other possible spouses who also meet this condition. Therefore, when a military couple is observed, this should be understood to mean that the spouse was the best choice among the possibilities. A similar point holds for the would-be spouse with respect to choosing whom to marry. Whether this condition holds depends on whether utility is greater for an individual as part of a couple sharing time and income and handling household chores and childrearing together, than as a single individual sharing time with others (friends, family) and handling chores alone.

Deployment adds a twist to this. A deployed service member is not physically present at home to share time and handle chores, and this is true for both single and married service members. A deployed married service member is presumably more likely to have someone back home with whom to communicate experiences and emotions, when communication is possible, yet may feel stress from absence and not being able to help solve problems, take care of chores, take part in family events such as births, birthdays, holidays, and graduations, or help if family

members become ill or disabled, and may not want to share stressful information from military operations. As before, the state in $t+1$ shows an increase in military experience and no increase in civilian experience.

Let W (rather than V) designate the spouse's value function, Y designate the spouse's utility function, and assume the spouse is a civilian. The spouse's value of being single or married to a service member is, respectively,

$$\begin{aligned} Ws(C,S(t)) &= Y(w,e) + \delta Ws(C,S(t+1)), \\ Wm(C,S(t)) &= (1-p)Y(h,w,b,e) + pEY(0,w,b+\upsilon d,e) \\ &\quad +\delta Wm(C,S(t+1)) + \beta + \gamma + \omega. \end{aligned}$$

This formulation for the value to marriage omits any spouse preference for deployment, though one could be included. A necessary condition for the spouse to marry a service member is $Wm(C, S(t)) \geq Ws(C, S(t))$. Marriage is more likely the higher the spouse's utility, which depends on utility when the member is home and spends h fraction of the time at home and earns b, and utility when the member is deployed and spends no time at home and earns b + υδ. The spouse's utility is also affected by employment opportunities as a military spouse. Because military life involves frequent relocations and sometimes living in areas far from urban areas with richer employment opportunities, it may be harder for a military spouse to find a job and the wage may be lower, but offsetting this to some extent are the benefits available in the military (as discussed further below). Also, the spouse's employment experience while the couple is in the military might affect the spouse's future earnings, as reflected through $Wm(C, S(t+1))$. Finally, marriage is more likely the higher the spouse's intrinsic gain from marriage, β, and preference for the military, γ. It is also possible that the random draw ω differs between being single and being married (and living on or near a base).

Comparing Reenlistment for Unmarried and Married Service Members

We now compare the reenlistment conditions for a single vs. a married service member. Drawing together the above expressions, a single member reenlists if

$$\begin{aligned} (1-p)U(h,b) + p(EU(0,b+\upsilon d,d) + \nu) + \tau + \varepsilon + \delta E \operatorname{Max}(Vs(M,S(t+1)), \\ Vs(C,S(t+1))) \geq U(h,y) + \delta Vs(C,S(t+1)). \end{aligned}$$

Assuming a couple stays married, a married member reenlists if

$$\begin{aligned} (1-p)U(h,w,b,e) + p(EU(0,w,b+\upsilon d,d,e) + \nu) + \tau + \alpha + \varepsilon \\ +\delta E \operatorname{Max}(Vm(M,S(t+1)), Vm(C,S(t+1))) \geq U(h,w,y,e) \\ +\alpha + \delta Vm(C,S(t+1)) \end{aligned}$$

and the spouse is willing for the member to stay in the military if

$$(1-p)Y(h,w,b,e) + pEY(0,w,b+\upsilon d,e) + \delta Wm(C,S(t+1)) \\ +\beta+\gamma+\omega \geq Y(h,w,y,e) + \delta Wm(C,S(t+1)) + \beta.$$

Deployment causes several effects for *any* service member, single or married. It reduces time at home station, which reduces utility (though probably not for everyone); increases time deployed, which may at least initially increase utility; and increases deployment-related pay, which increases utility. The amount of deployment matters as well. Too little or too much reduces utility relative to expected utility, and this might lead to a revision in expected deployment in the future, affecting future expected utility from deployment. In addition to one's own recent deployment experience, new information available at time t about deployment could affect current and future expected utility from deployment.

The effect of deployment may differ for a married service member, however, because the member's utility is joint with the time and earnings of the spouse and deployment pay is higher for a married member than for a single member. Further, deployment exerts an effect on the spouse's utility. When the member deploys, the spouse will adjust hours of work (and earnings) to maximize utility over the course of the deployment. For instance, this might mean more purchased services such as prepared food, baby sitting, house cleaning, and home maintenance, with deployment pay helping to pay for these services, and a decrease in hours of work to spend more time in activities with children. Another aspect is that new information about deployment will also affect the spouse's expected utility from deployment. An increase in expected deployment might increase the member's expected utility but decrease the spouse's expected utility, for example. The member might prefer to stay in the military and the spouse might prefer the member to leave. The extent to which such "negative" surprises occur depends on how well the spouse is informed about deployment and its consequences when making the decision to marry the service member, and the role of new information about deployment that might cause a downward revision in expected utility. If the spouse is well informed and anticipated future deployment remains the same, then there may be little difference in the effect of deployment on the reenlistment of single vs. married service members.

As a thought experiment, suppose the impact of deployment on the value of remaining in the military was negative but the same for single and married service members. The effect of deployment on reenlistment nevertheless could differ if, for instance, the ex ante value of remaining in the military were on average higher for married members. This value could be higher if military benefits, especially health benefits, are worth more to married members, and because of selection into marriage. The average taste for military service might be higher for married members. The higher utility of being in the military among marrieds provides a "buffer" to any negative utility effect of deployment. A single member thinking about marriage and not intending to stay in the military would prefer to postpone marriage until after leaving, rather than trying to find a spouse who, despite desiring to marry a

civilian, is willing to be a military spouse for a short time and to cope with relocation after leaving the military. By comparison, a single member thinking about marriage and intending to stay in the military does not have the same reason to postpone marriage. Further, under the theory of marriage (Becker, 1973, 1974), assortative mating tends to occur with "likes marrying likes," and a member with a high taste for the military will tend to marry a spouse with a high taste for the military. Related to the latter, a military spouse can expect lower earnings and employment than if the spouse were married to a civilian, and so we expect the spouse's preference for the military to be sufficiently high to compensate for this given that the spouse chose to marry into the military.

Data

We use data from two sources, both from the Defense Manpower Data Center. The first source consists of the Status of Forces Surveys of Active-Duty Personnel from 2002 to 2005. These 10 cross-sectional surveys were administered online and had response rates of 30–35% on a sample frame of about 35,000, resulting in samples sizes of about 10,000 per survey. The second source is the "proxy PERSTEMPO" administrative data file, a longitudinal file of all Active Component personnel that contains information on years of service, rank, military occupational specialty, deployment, and demographics including age, education, gender, race/ethnicity, marital status. Our analysis focuses on enlisted personnel stratified by branch of service.

We received permission to link the survey responses to the administrative data file, which enabled us to include information on deployment over 3 years prior to reenlistment (the survey refers only to the previous 12 months), determine whether the deployment involved hostile duty (the survey refers only to "time away"), and observe actual reenlistment subsequent to the survey (the survey asks about the intention to stay). The proxy PERSTEMPO data are for fiscal 1996 to fiscal 2007. Virtually all respondents in the surveys from 2002 to 2003 had made a reenlistment decision by the end of fiscal 2007, and many but not all of the respondents in the 2004–2005 surveys had done so. Our regression analysis of reenlistment in the linked survey data includes only those respondents for who a reenlistment decision was observed. We also obtained the administrative pay file corresponding to the years of our PERSTEMPO file. We used the pay file to create a variable on the reenlistment bonus, if any, available to a service member at the time of reenlistment, and linked this information to the member's record in the PERSTEMPO file.

In sum, we use two data sets in our empirical analysis: 2002–2005 Status of Forces Survey data for Active Component enlisted personnel at first-term or second-term-or-higher reenlistment to which administrative data (from personnel records and pay data) have been linked; and 1996–2007 administrative data on the *entire* population of enlisted service members at first- and second-term reenlistment.

Empirical Method

We analyze four binary outcomes in the survey data and one in the administrative data. The survey outcomes are self-reported higher-than-usual work stress, higher-than-usual personal stress, intention to reenlist, and actual reenlistment, and the outcome in the administrative data is actual reenlistment.

The question for work stress was, "Overall, how would you rate the current level of stress in your work life?" We defined "higher than usual work stress" as an endorsement of either of the following responses from a five-response Likert scale: "more than usual" or "much more than usual." We defined "higher than usual personal stress" similarly. Intention to reenlist was coded from the responses of "likely" or "very likely" to the question, "Suppose that you have to decide whether to stay on active duty. Assuming you could stay, how likely is it that you would choose to do so?" We define actual reenlistment as an increase of 2 years or more in obligated service recorded on the respondent's administrative record. A service member may decide to extend a current term of service, and if so we follow the service member until the reenlistment decision, as indicated by departure from service or an increase of 2 or more years of obligated service. The percentages with a positive response for each dependent variable are shown in Table 14.1.

These percentages are in a range such that the results from linear probability regressions estimated by ordinary least squares are much the same as those from nonlinear methods such as probit or logistic regression (Wooldridge, 2001). As a result, we estimate linear probability regressions given their ease of interpretation. The tables of coefficients below are deployment effects from linear probability regressions. A coefficient of, say, 0.05, has the interpretation that a unit change in the explanatory variable – e.g., a "1" for having hostile deployment vs. a "0" for no hostile deployment – leads to a 5% increase in the dependent variable.

We use different definitions of deployment in the course of the analysis. Throughout, we distinguish between deployments involving hostile duty or not. Our

Table 14.1 Percentage with positive response

	Survey data				Administrative data
	Higher-than-usual work stress	Higher-than-usual personal stress	Intention to stay in military	Reenlist	Reenlist
First term					
Army	0.58	0.50	0.34	0.41	0.35
Navy	0.57	0.44	0.45	0.44	0.43
Marines	0.56	0.48	0.32	0.28	0.24
Air Force	0.48	0.36	0.49	0.53	0.53
Second term					
Army	0.51	0.45	0.62	0.51	0.64
Navy	0.48	0.39	0.71	0.52	0.57
Marines	0.44	0.41	0.72	0.61	0.58
Air Force	0.49	0.36	0.74	0.67	0.68

main interest is in deployment involving hostile duty; every regression also contains an indicator of nonhostile deployment as a control variable. For deployment involving hostile duty, we first use an indicator of deployment with hostile duty in the year prior to the reenlistment decision, and in later specifications we use indicators for 1–11 months, and 12 or more months, of hostile deployment in the 3 years preceding reenlistment. The regressions include many controls and they are listed in a note to the tables. The full set of regression results is available from the authors on request.

Empirical Results

We present results for all four services, but our discussion concentrates on the Army and Marines as they have had the largest burden of deployments to Iraq and Afghanistan. We focus on the first-term reenlistment decision for brevity but also report results for the second-term reenlistment decision. The tables present deployment coefficients for single and married members, a standard deviation and indication of statistical significance for each coefficient, and a *p*-value for the null hypothesis that the single and married deployment effect coefficients are equal. Our survey data regressions are unweighted, although exploratory analysis comparing weighted to unweighted regressions indicated little difference. Finally, the occurrence of deployment is assumed to be exogenous. We use observed deployment, and we do not use an instrumental variable for deployment. This approach is consistent with the finding that conditional on service and occupation, deployments are quasi-randomly assigned (Lyle, 2006; Savych, 2008).

We begin by reporting findings from the analysis of the Status of Forces survey. Tables 14.2 and 14.3 provide estimates of effects of hostile deployment in the previous 12 months for first-term and second-term-plus survey respondents. The results for first-term show that work stress is significantly related to hostile deployment for all services except the Air Force, but these effects do not differ significantly by marital status (either in a statistical or quantitative sense). Hostile deployments also increase the likelihood of having higher than usual personal stress. Consistent with the idea that deployments contribute to stress in a marital relationship, the effect for marrieds is substantially larger than it is for singles in the Army (increases of 10.4% and 4.6%, respectively). The effect for Marines is also larger for marrieds, but the married-single contrast is not statistically significant.

Despite the fact that personal stress increases more for deployed marrieds than singles, the results for first-term also suggest that hostile deployment has a higher effect on intention to stay and reenlistment for marrieds. Overall, hostile deployment tends to reduce intentions to reenlist, but the magnitude of the reduction is significantly larger for singles in the Army and Marines Corps. Similarly, the results for actual reenlistment show that deployment has significant negative effects for the Army and Marines Corps for singles. For marrieds in the Army, deployment also has a negative, but smaller effect, and for the Marines it is actually positive although small in magnitude and not statistically significant.

Turning to the results for the full administrative data in Table 14.4 where we pool all decisions made between 2002 and 2007, we again see that deployments

Table 14.2 Effects of deployment using status of forces survey data, first term

	Army	Navy	Marines	Air Force
	Higher-than-usual work stress			
Married	0.118[c]	0.074[b]	0.023	–0.010
	(0.022)	(0.026)	(0.030)	(0.026)
Single	0.112[c]	0.076[c]	0.055[a]	–0.024
	(0.021)	(0.020)	(0.023)	(0.024)
p-value for married = single	0.831	0.946	0.364	0.673
	Higher-than-usual personal stress			
Married	0.104[c]	0.060[a]	0.033	0.024
	(0.022)	(0.028)	(0.030)	(0.025)
Single	0.046[a]	0.067[b]	0.022	0.020
	(0.021)	(0.020)	(0.023)	(0.023)
p-value for married = single	0.034	0.822	0.753	0.920
	Intention to reenlist			
Married	–0.077[c]	–0.026	–0.060[a]	–0.082[b]
	(0.020)	(0.026)	(0.028)	(0.025)
Single	–0.126[c]	–0.055[b]	–0.114[c]	–0.044[a]
	(0.019)	(0.020)	(0.020)	(0.024)
p-value for married = single	0.047	0.364	0.093	0.243
	Actual reenlistment			
Married	–0.052[a]	0.027	0.016	0.050[a]
	(0.025)	(0.030)	(0.030)	(0.028)
Single	–0.097[c]	–0.015	–0.064[b]	0.013
	(0.025)	(0.024)	(0.021)	(0.028)
p-value for married = single	0.160	0.249	0.019	0.329

Notes: The table shows estimates from linear probability models estimated separately by service branch. The models include the following controls: having only non-hostile deployment, spending more than one night away from home without being deployed, how prepared the respondent feels to carry out his or her job, Armed Forces Qualification Test (AFQT) category, location (rural or urban), education, race, a marital status "main effect," whether the respondent is in a dual-service marriage, gender, survey wave indicator variables, one-digit DoD occupational specialty fixed effects, years of service, and pay grade

Key: [a]significant at 0.1; [b]significant at 0.01; [c]significant at 0.001

tend to have a larger (more positive) effect for married service members. For all services, deployment has a negative effect on reenlistment among singles. The magnitude of these effects is modest; about 1% for the Army and Marines. On the other hand, deployments have a positive effect on the reenlistment of married individuals. In the Army, this effect is also small (1.2%), while it is nearly 5% for Marines. All of the married-single contrasts are statistically significant, but it should be borne in mind that this is partially a function of the large sample sizes.

The estimates in Table 14.4 that pool across years are instructive, but they do not shed light on how the effects of deployment changed as the exposure to deployment shot up in recent years. To address this issue, we estimated the models separately by year of decision. Figure 14.2 plots the estimated coefficient on being deployed in the 12 months prior to the decision, at first-term reenlistment by marital status. Because of the large number of observations in the administrative data and fairly higher percentages deployed, practically all of the deployment coefficients

Table 14.3 Effects of deployment using status of forces survey data, second term

	Army	Navy	Marines	Air Force
	Higher-than-usual work stress			
Married	0.102[c]	0.127[c]	0.059[b]	0.027
	(0.013)	(0.016)	(0.021)	(0.017)
Single	0.087[c]	0.122[c]	0.039	0.005
	(0.020)	(0.022)	(0.035)	(0.025)
p-value for married = single	0.492	0.843	0.607	0.453
	Higher-than-usual personal stress			
Married	0.097[c]	0.054[c]	0.050[b]	0.039[b]
	(0.013)	(0.016)	(0.021)	(0.016)
Single	0.080[c]	0.006	–0.003	0.007
	(0.020)	(0.022)	(0.034)	(0.023)
p-value for married = single	0.415	0.072	0.156	0.234
	Intention to reenlist			
Married	–0.050[c]	0.027[a]	–0.020	–0.031[a]
	(0.012)	(0.012)	(0.018)	(0.014)
Single	–0.054[b]	0.006	0.029	–0.050[a]
	(0.019)	(0.021)	(0.032)	(0.023)
p-value for married = single	0.868	0.376	0.156	0.471
	Actual reenlistment			
Married	0.031[a]	0.126[c]	0.080[c]	0.044[b]
	(0.015)	(0.018)	(0.023)	(0.017)
Single	–0.014	0.111[c]	0.081[a]	0.010
	(0.025)	(0.029)	(0.040)	(0.031)
p-value for married = single	0.092	0.648	0.978	0.322

Notes: See Table 14.2 for list of additional covariates included in these regressions
Key: [a]significant at 0.1; [b]significant at 0.01; [c]significant at 0.001

are statistically significant and the confidence bands are not shown. For the Army prior to 2005, deployment had a positive effect for both marrieds and singles, and the size of these effects was larger for married service members. Recently, however, there was a sharp decline in the deployment effects. In 2006, the effects were negative and sizable for both groups. Perhaps more interesting is that the negative effect for marrieds exceeded that for singles, reversing the pattern seen since 1996. This result is also noteworthy since our measures of deployment exposure peak in 2006. In 2007, the effect rebounds somewhat for marrieds and is again greater than that for singles, but it remains negative and statistically significant.

The results for Marines differ from those in the Army. The effect of deployment is always larger for marrieds, and this gap remains fairly similar over time (about 5%). In most years, the effect for singles is negative but small in magnitude. Moreover, the sharp fall in the effects in 2006 seen for the Army is not apparent for the Marines. In fact, the coefficients grow in 2006 and 2007. In the Air Force and Navy, which both saw much less combat than the Marines or Army, the effects of deployment show few trends and the effects for marrieds are consistently above those for singles.

The results in Fig. 14.2 beg the question of why the deployment effects for the Army fall so sharply in 2006 and to a lesser extent in 2007. One possible explanation

Table 14.4 Effects of deployment using administrative data, 2002–2007

	Army	Navy	Marines	Air Force
	First term			
Nonhostile deployment only	0.037[c]	0.069[c]	0.032[c]	0.117[c]
	(0.006)	(0.005)	(0.005)	(0.007)
Hostile deployment: married	0.012[b]	0.036[c]	0.048[c]	0.042[c]
	(0.004)	(0.005)	(0.004)	(0.005)
Hostile deployment: single	–0.010[c]	–0.027[c]	–0.008[b]	–0.022[c]
	(0.003)	(0.003)	(0.003)	(0.005)
p-value for Single = married	0.000	0.000	0.000	1.00
	Second term			
Nonhostile deployment only	0.083[c]	0.147[c]	0.111[c]	0.073[c]
	(0.005)	(0.005)	(0.009)	(0.007)
Hostile deployment: married	0.030[a]	0.082[c]	0.093[c]	0.040[c]
	(0.004)	(0.005)	(0.008)	(0.005)
Hostile deployment: single	–0.008	–0.005	0.031[b]	0.011
	(0.005)	(0.006)	(0.012)	(0.008)
p-value for single = married	99,082	79,270	28,478	47,647
	0.000	0.000	0.000	0.002

Note: Table shows regression coefficients on deployment variables. Separate models are estimated by service branch and also first/second term. The models also include controls of DoD three-digit occupational specialty-by-quarter fixed-effects, years of service at the time of the decision, education, gender, Armed Forces Qualification Test (AFQT) category, race, being promoted more rapidly than is typical, and year-of-decision indicators

Key: [a]significant at 0.1; [b]significant at 0.01; [c]significant at 0.001

is that the effect of deployment is more negative when a service member has many months deployed, coupled with the fact that in 2006 the average months spent on deployment was highest. To examine this hypothesis, we estimated the deployment effects separately by whether the individual spent less than 12 months on deployment or 12 or more months in the 36 months preceding the reenlistment decision.

Figure 14.3 plots the estimated deployment effects over time for at first-term reenlistment by marital status and months spent deployed. For the Army, the coefficients for married individuals who spent 1–11 months deployed are consistently above those for singles who also had 1–11 months deployed. However, the effect of deployment for those who had 12 or more months deployed is not very different for marrieds and singles, and the effect for marrieds is sometimes below that for singles (notably in 2006). Thus, part of the reason why the effects for marrieds are higher than for singles is that singles who are deployed are more frequently in the 12+ month group. For the Marines, we again see that the effect of deployment for singles is below that for marrieds among those with 1–11 months of deployment. For those with 12 or more months of deployment, this pattern also holds except in 2002. In contrast to the results for the Army and Air Force, the results do not differ substantially by whether the member spent 1–11 or 12 or more months on deployment; the more pronounced difference is between the effects for marrieds and singles.

Finally, we examined whether marrieds or singles respond differently to reenlistment bonuses. Since married service members have dependents, cash reenlistment

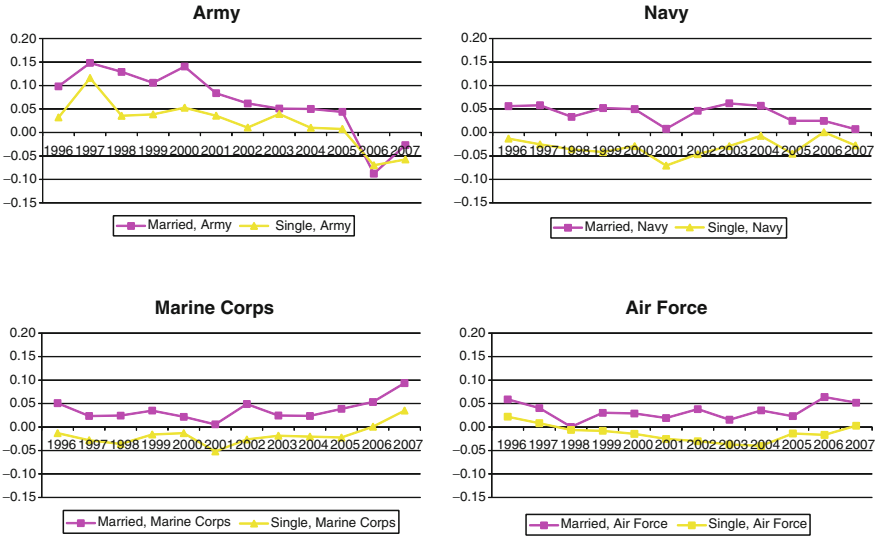

Fig. 14.2 Effect of deployment in 12 months prior to decision on first-term reenlistment by year of decision, by service and marital status

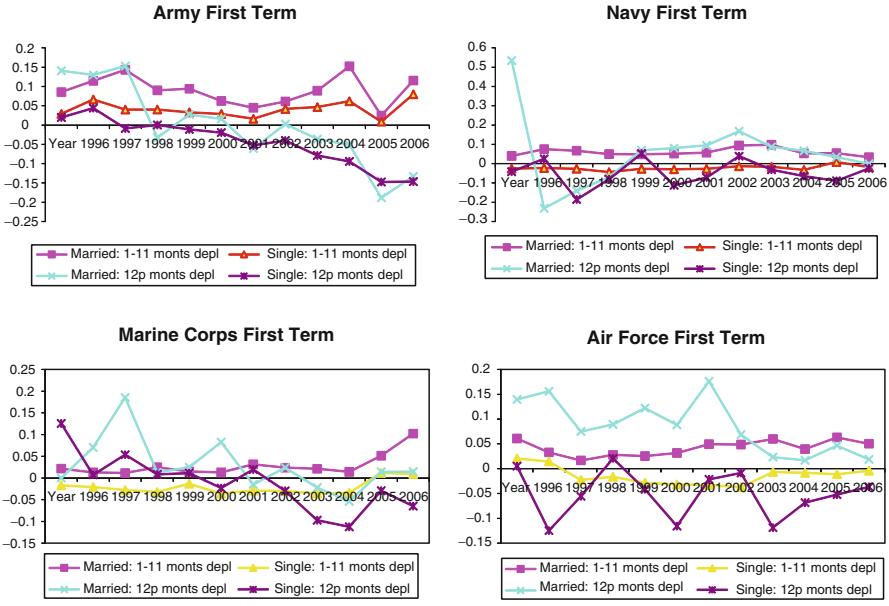
Army First Term
Navy First Term
Marine Corps First Term
Air Force First Term
Year 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006
Married: 1-11 monts depl
Single: 1-11 monts depl
Married: 12p monts depl
Single: 12p monts depl

Fig. 14.3 Differential effect of deployment in 36 months prior to decision on first-term reenlistment by months deployed and marital status

bonuses might have a larger effect for this group. The results in Table 14.5 provide some indication that this is the case. For first-term members, the effect of the reenlistment bonus multiplier is positive and statistically significant for both married and

Table 14.5 Bonus effects using administrative data, 2002–2007

	Army	Navy	Marines	Air Force
	First term			
Nonhostile deployment only	0.037[c]	0.069[c]	0.032[c]	0.117[c]
	(0.006)	(0.005)	(0.005)	(0.007)
Hostile deployment: married	0.012[b]	0.036[c]	0.048[c]	0.042[c]
	(0.004)	(0.005)	(0.004)	(0.005)
Hostile deployment: single	–0.010[c]	–0.027[c]	–0.008[c]	–0.022[c]
	(0.003)	(0.003)	(0.003)	(0.005)
p-value for single = married	0.000	0.000	0.000	1.00
	Second term			
Nonhostile deployment only	0.083[c]	0.147[c]	0.111[c]	0.073[c]
	(0.005)	(0.005)	(0.009)	(0.007)
Hostile deployment: married	0.030[c]	0.082[c]	0.093[c]	0.040[c]
	(0.004)	(0.005)	(0.008)	(0.005)
Hostile deployment: single	–0.008	–0.005	0.031[b]	0.011
	(0.005)	(0.006)	(0.012)	(0.008)
p-value for single = married	99,082	79,270	28,478	47,647
	0.000	0.000	0.000	0.002

Note: Table shows regression coefficients on reenlistment bonus multiplier variables. Separate models are estimated by service branch and also first/second term. The models also include controls of DoD three-digit occupational specialty fixed-effects, years of service at the time of the decision, education, gender, Armed Forces Qualification Test (AFQT) category, race, being promoted more rapidly than is typical, and year-of-decision indicators
Key: [a]significant at 0.1; [b]significant at 0.01; [c]significant at 0.001

single service members, for all services. These effects are larger for marrieds than for singles except in the Navy, and these differences are statistically significant. However, they are not very large in magnitude. For instance, in the Army, a one-unit increase in the selective reenlistment bonus (SRB) multiplier increases the likelihood of reenlisting by 3.5% for marrieds and 2.9% for singles (a 21% difference). At second term, the patterns are largely the same, although now the estimates are significantly larger for marrieds only in the Navy and in the Air Force. (The covariates included in these regressions are the same as for Table 14.4, except these models control for DoD three-digit occupational specialty fixed-effects rather than three-digit occupational specialty-by-quarter effects. Since bonuses do not vary within occupation at a given point in time, bonus effects are not identified in that model).

Conclusion

Deployments place stress not only on the deployed service member but also on spouses and other family members left at home. The recent high pace of deployments to Iraq and Afghanistan have raised concerns about the impact these missions have had on the wellbeing of service members and their families, especially in the Marine Corps and Army, where the increase in deployment exposure was the greatest. In this

chapter, we examined the effect of deployment on "quality of life" measures such as the incidence of high work and personal stress as well as on the decision to remain in the military, paying close attention to how these effects differ by marital status.

The findings suggest that deployment has a stronger effect on the likelihood of reporting higher than usual personal stress in the Army, but when it comes time to make a decision about whether to leave the military deployment actually has a larger positive effect on reenlistment for marrieds than for singles.

Why does deployment tend to increase the reenlistment rate for married service members more than for singles even though there is some evidence that deployments have a greater effect on personal stress for marrieds? There are many possible explanations, but a second contribution of this paper is the development of a simple model that suggests an important role for self-selection into the military for explaining our results. In particular, if service members marry while in the military, it is plausible that they have higher "taste" for military life and deployment than do singles. This may be because of assortative mating on tastes for the military (i.e., individuals willing to marry into a military family will tend to have higher overall taste for the military, and marry individuals in the military who also have high taste for serving in the military). This type of self-selection implies that any negative effect of deployment on utility is relatively less likely to make military life on net less desirable than civilian life. If taste for deployment is correlated with taste for the military, which is consistent with assortative mating, then we can expect to see marrieds responding more positively (less negatively) to deployment. Yet another explanation is that marrieds value the additional pay associated with deployment more than singles, perhaps due to the need to support dependents. However, the additional pay, which comes through the family separation allowance, is currently $250/month or $3,000 for 12 months of deployment. Assuming that income is sheltered from tax by the combat zone tax exclusion, it would nevertheless be a small fraction of future military income for a service member thinking of reenlisting for a 3- or 4-year hitch, and therefore its role in explaining the higher effect of deployment on reenlistment for marrieds than for singles seems small.

While our empirical findings lay out interesting patterns that are consistent with these conjectures, we have no evidence directly on the service member's and spouse's tastes for military life and deployment. Learning more about the selection into marriage with a service member and about how military marrieds vs. singles cope with deployment may be a fruitful area for future research. Although our focus has been on reenlistment, the broader topic is family resilience throughout the deployment cycle. Finally, granted a differentially higher response to deployment for marrieds than for singles, one is still struck by the overall similarity in their patterns of response. This suggests that the current policy emphasis on the military family, while well placed, should be extended to include "families" of one, i.e., single service members.

Appendix

See Tables 14.6–14.8.

Table 14.6 Descriptive statistics for administrative data sample (first term)

	Army		Navy		Marines		Air Force	
	Married	Single	Married	Single	Married	Single	Married	Single
Reenlisted	0.44	0.28	0.54	0.44	0.33	0.20	0.64	0.49
Nonhostile deployment only, prior 12 months	0.08	0.01	0.23	0.03	0.20	0.01	0.09	0.01
Hostile deployment, prior 12 months	0.49	0.56	0.35	0.43	0.46	0.54	0.25	0.31
Selective reenlistment bonus (SRB) multiplier	0.98	0.94	1.52	1.54	1.07	1.11	1.53	1.61
Years of service	4.30	3.96	4.32	4.26	4.20	4.20	4.86	4.61
HS dropout or education missing	0.02	0.01	0.03	0.02	0.00	0.00	0.00	0.00
GED	0.10	0.09	0.08	0.06	0.04	0.03	0.00	0.00
At least some college	0.18	0.13	0.11	0.08	0.06	0.04	0.11	0.09
Male	0.82	0.87	0.82	0.83	0.92	0.95	0.73	0.74
AFQT below category IIIB or missing	0.02	0.01	0.00	0.00	0.01	0.01	0.00	0.00
AFQT category IIIB	0.28	0.28	0.40	0.39	0.34	0.30	0.23	0.23
AFQT category II	0.36	0.36	0.28	0.30	0.34	0.37	0.42	0.42
AFQT category I	0.05	0.05	0.02	0.03	0.03	0.04	0.05	0.06
White	0.61	0.63	0.54	0.56	0.68	0.71	0.72	0.69
Black	0.20	0.19	0.21	0.21	0.11	0.11	0.15	0.19
Promoted rapidly	0.66	0.65	0.50	0.50	0.77	0.78	0.84	0.85

Note: All variables listed are "0–1" indicator variables except years of service and the SRB multiplier. Cell entries represent sample means. The standard deviation for a "0–1" indicator variable can be computed from the mean as the square root of mean (1 – mean)

Table 14.7 Descriptive statistics for survey data sample (first term)

	Army		Navy		Marines		Air Force	
	Married	Single	Married	Single	Married	Single	Married	Single
Intend to reenlist	0.38	0.29	0.51	0.41	0.35	0.29	0.53	0.44
Higher than usual work stress	0.59	0.57	0.58	0.57	0.58	0.55	0.50	0.47
Higher than usual personal stress	0.53	0.47	0.49	0.41	0.49	0.47	0.38	0.34
Actual reenlistment	0.44	0.36	0.50	0.39	0.33	0.25	0.58	0.48
Nonhostile deployment only	0.18	0.01	0.23	0.01	0.24	0.01	0.12	0.01
Hostile deployment	0.32	0.34	0.29	0.30	0.26	0.29	0.20	0.22
Away from home but not deployed	0.44	0.38	0.37	0.33	0.43	0.40	0.34	0.29
Very poorly prepared for job	0.04	0.04	0.03	0.02	0.03	0.02	0.01	0.01
Poorly prepared for job	0.08	0.10	0.05	0.05	0.06	0.05	0.05	0.04
Well prepared for job	0.42	0.44	0.47	0.51	0.43	0.47	0.48	0.51
Very well prepared for job	0.29	0.24	0.30	0.25	0.35	0.31	0.31	0.29
AFQT category I	0.08	0.10	0.05	0.06	0.05	0.07	0.05	0.06
AFQT category II	0.37	0.40	0.34	0.36	0.41	0.46	0.44	0.45
AFQT category IIIA	0.27	0.27	0.26	0.25	0.27	0.26	0.28	0.28
AFQT category IIIB	0.24	0.20	0.32	0.31	0.24	0.20	0.20	0.20
Rural location	0.03	0.01	0.01	0.01	0.02	0.01	0.09	0.07
Micropolitan area	0.11	0.11	0.11	0.10	0.20	0.17	0.07	0.08
Metropolitan area	0.65	0.50	0.77	0.47	0.72	0.60	0.64	0.60
Some college	0.03	0.02	0.02	0.01	0.02	0.01	0.22	0.13
College graduate	0.10	0.08	0.04	0.02	0.01	0.01	0.01	0.02
Black	0.21	0.22	0.17	0.20	0.12	0.12	0.16	0.23
Hispanic	0.19	0.16	0.20	0.12	0.19	0.16	0.08	0.06
Other race	0.07	0.09	0.16	0.16	0.06	0.07	0.09	0.09
Dual career spouse	0.22	0.00	0.23	0.00	0.27	0.00	0.35	0.00
Male	0.76	0.72	0.76	0.71	0.73	0.80	0.71	0.70

See note to Table 14.6

Table 14.8 Glossary of explanatory variables

Variable	Description
Nonhostile deployment only in window	1 if deployed in 12- or 36-month window but did not receive hostile fire pay (HFP), 0 otherwise
Hostile deployment in window	1 if received HFP in 12 month or 36 month window
SRB multiplier	Average bonus multiplier in an respondent's DoD three-digit occupation and zone at the time of the reenlistment decision
Years of service	Years of active-duty military service
HS dropout or education missing	1 if respondent has less than a HS diploma or the education information is missing, 0 otherwise
GED	1 if respondent has a General Educational Development (GED) degree, 0 otherwise
At least some college	1 if respondent has at least some college education, 0 otherwise
Male	1 if respondent is male, 0 otherwise
Armed Forces Qualification Test (AFQT) less than category IIIB	1 if AFQT percentile below 31st percentile
AFQT category IIIB	1 if AFQT percentile between 31st and 49th percentile
AFQT category II	1 if AFQT percentile between 65th and 92nd percentile
AFQT category I	1 if AFQT percentile above 92nd percentile
White, Black, Hispanic, or other	1 if respondent is member of given racial group
Promoted rapidly	1 if pay grade is higher than the average pay grade for members with the same years of service at the time of the reenlistment decision
Away from home but not deployed	1 if respondent spent any nights away from usual duty location in 12 months prior to survey, but not deployed, 0 otherwise
Very poorly prepared for job duties	1 if respondent indicated that he or she was very poorly prepared for his or her wartime job duty, 0 otherwise
Poorly prepared for job duties	1 if respondent indicated that he or she was poorly prepared for his or her wartime job duty, 0 otherwise
Well prepared for job duties	1 if respondent indicated that he or she was well prepared for his or her wartime job duty, 0 otherwise
Very well prepared for job duties	1 if respondent indicated that he or she was very well prepared for his or her wartime job duty, 0 otherwise

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Chapter 15
Post-Deployment Indicators of Single Soldiers' Well-Being

Lyndon A. Riviere and Julie C. Merrill

Abstract The civilian literature indicates that married individuals generally have better health than others; but little is known as to whether this also applies to soldiers. Using a sample of 4,346 soldiers surveyed 3–4 months after Iraq deployments, we examined three perspectives that explain the advantage of the married (social causation and social selection hypotheses, and crisis theory). We divided single soldiers into two groups – never married and previously married – and compared their well-being to married soldiers using logistic regression (adjusting for age, gender, rank, parental status, education, and combat exposure).

Findings show that previously married soldiers are more likely than married soldiers to report poor well-being. Never married soldiers are generally comparable to married soldiers, but report more risky behaviors. Tentative evidence was found to support both the social causation and social selection hypotheses; however, longitudinal data is needed to fully assess crisis theory and for more definitive conclusions across perspectives.

Introduction

It has been well established that combat exposure in recent conflicts such as Iraq and Afghanistan can have negative consequences for both the mental and physical health of military service members (see Hoge et al., 2004; Hoge, Auchterlonie, & Milliken, 2006; Milliken, Auchterlonie, & Hoge, 2007; Smith et al., 2008). Because the extant evidence indicates that the majority of military service members who were exposed to combat trauma do not develop any mental health problems, several studies have examined what factors contribute to differential vulnerability to developing these problems. These studies have largely focused on psychological variables such as pre-combat mental health problems (e.g., Rona et al., 2009), childhood

L.A. Riviere (✉)
Center for Military Psychiatry and Neuroscience, Military Psychiatry, Walter Reed Army Institute of Research Branch, Silver Spring, MD, USA
e-mail: Lyndon.riviere@us.army.mil

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adversity (e.g., Cabrera, Hoge, Bliese, Castro, & Messer, 2007), and pre-deployment personality traits (e.g., Bramsen, Dirkzwager, & van der Ploeg, 2000). Notwithstanding consistent research findings that demonstrate that a more advantaged social status is linked to better mental and physical well-being (Pearlin, Schieman, Fazio, & Meersman, 2005), scant attention has been given to how indicators of social status such as marital status, which has been a concern of sociologists and social psychologists for several decades, may affect post-combat well-being.

Two major theoretical perspectives have guided research on marital status differences in well-being: the social causation hypothesis and the social selection hypothesis. Generally, the former, a variant of role theory, posits that certain social statuses confer social, environmental, and other advantages not provided by other social statuses, which result in better well-being (see Turner, 2003). One's exposure to stress is a function of one's social status, with some statuses having disproportionate exposure (Turner, Wheaton, & Lloyd, 1995). Simply stated, status influences health. In contrast, the social selection hypothesis argues that individuals with better mental and physical health attain more advantageous social statuses because of their superior health (Turner, 2003), or in other words, health influences status.

It has been posited that married individuals are more advantaged compared to individuals who are single (never married), separated, divorced, widowed, or even cohabitors. This may be because marriage is protective of one's well-being stemming from its economic benefits, social support, regulation of health behaviors, and health insurance (Musick & Bumpass, 2010; Waldron, Hughes, & Brooks, 1996), or because married individuals have lower exposure to stress (Turner et al., 1995). The social selection hypothesis argues that the observed advantage of married individuals occurs because healthier people are more likely to get married (Mookherjee, 1997; Williams & Umberson, 2004). Some studies have found evidence to support the social selection hypothesis (Stutzer & Frey, 2006; Wade & Pevalin, 2004), while others have found none (e.g., Kamp Dush & Amato, 2005). In some cases, both hypotheses have been supported (Simon, 2002; Wade & Pevalin, 2004).

A less-researched theoretical perspective is crisis theory. This perspective sees marital disruption as an acute stressor that temporarily results in more distress (Johnson & Wu, 2002). Contrary to the social causation hypothesis, this perspective disagrees with the proposition that divorced or widowed individuals are exposed to more stressors. It purports that once the stress of the transition (from being married to being divorced or widowed) abates, distress will level off (Booth & Amato, 1991; Johnson & Wu, 2002).

The vast majority of studies that have examined marital status differences in well-being, including those mentioned above, have used civilian samples. Our current focus is on physical health, mental health, and risky behaviors in U.S. Army soldiers. If marriage provides certain health benefits that other marital statuses do not, are single soldiers more susceptible to developing physical or mental health problems or engaging in risky behaviors after a deployment than married soldiers? We will interpret our findings in light of the three theoretical perspectives we have described.

Table 15.1 Marital status among OIF Army combat veterans

	Active Component $N=88,661$ (%)	National Guard $N=29,203$ (%)	Reserve $N=20,532$ (%)
Married	58.7	52.3	50.9
Never married	30.4	34.2	35.8
Separated	3.5	2.8	2.4
Divorced	7.3	10.5	10.7
Widowed	0.1	0.2	0.2
Unknown	>1	>1	>1

Note: The 2008 PDHRA data reported above is from the Armed Forces Health Surveillance Center (AFHSC)

Marital Status in the Army

According to recent data, the majority of soldiers are married. These data indicate that 56% of Active Component soldiers, 46% of Reserve Component, and 44% National Guard Soldiers are recorded as married (Office of Army Demographics, 2009). It is unknown what portion are intact marriages because the Army considers separated soldiers as married (see Karney & Crown, 2007). Self-reported data from recently deployed soldiers who completed the Post-deployment Mental Health Reassessment (PDHRA) are more detailed than the data for the overall Army. These data, collected between January 2008 and December 2008 are displayed in Table 15.1.

As can be seen from the table, the modal marital status across all three groups of soldiers is currently married. Just under one-third of all three groups are single, never married soldiers. Less than 15% of the soldiers in all three groups were previously married (separated, divorced, or widowed). No gender differences were noted in these data.

Methodology

In this chapter, we define "single soldiers" as all nonmarried soldiers. There are four groups of single soldiers: never married, separated, divorced, and widowed. While some bivariate analyses revealed that separated soldiers report poorer well-being than divorced soldiers, because of the sample size specifications of logistic regression, we combined separated and divorced soldiers into one group – the previously married. Since the literature suggests that widows are distinguishable from individuals who have experienced a marital dissolution, they were not included in the previously married group. While we would have liked to compare the well-being of widowed soldiers to married soldiers, they comprised less than 1% of the sample; thus, we could not make meaningful comparisons and they were excluded. Consequently, this study focused on two groups of single soldiers – the never married and the previously married. We will compare and contrast both groups to the married group.

Sample

The sample for this study is comprised of 4,346 Active Component soldiers from four brigades at U.S. military installations. These soldiers were surveyed between 2003 and 2006 3–4 months following deployments to Iraq. About 40% had experienced more than one deployment in their career that lasted 30 or more days. Soldiers who had not deployed to Iraq were not included in the sample. Forty-five percent were married, which is slightly less than the self-reported PDHRA data displayed in Table 15.1 (which is collected at a similar time point post-deployment as our sample). Another 45% of the sample indicated that they were never married, which is substantially more than the percentages reported in Table 15.1. Ten percent of the sample were either separated or divorced, which is comparable to the percentage reported for Active Component soldiers in Table 15.1.

Table 15.2 displays the demographic distributions and the mean combat exposure of the three marital status groups of interest. All three marital status groups report similar mean combat exposure. Married and previously married soldiers are comparable in terms of age. The majority of the never married soldiers were younger than the other two groups, which is to be expected. The previously married group also has almost three times the number of female soldiers as either of the other two groups. In terms of rank, close to 80% of the never married group were in the junior enlisted rank, whereas for the other two marital status groups, the majority of the soldiers were fairly evenly spread out over both junior enlisted and noncommissioned officer (NCO) ranks. The never married soldiers were least likely to indicate that they had or supported children, which contrasts sharply with the percentages reported by the other two marital status groups. The modal education level for all three groups was GED/high school diploma, with the married soldiers having the highest percentage of respondents with at least a college education. Among racial/ethnic groups, whites and blacks had the most variability in percentages across the three marital status groups. Forty-three percent of whites and 44% of blacks were married while 9.4% whites and 12.4% of blacks reported that they were previously married.

Measures

The three groups of soldiers are compared on three broad domains of well-being: physical health, mental health, and risk behaviors. *Physical health* was assessed in three ways. First, a question on self-rated overall health was included from the SF-8 (Ware, Kosinski, Dewey, & Gandek, 2001) that asked respondents to indicate on a 5-point response scale from fair to excellent how well they rated their general health in the past month. Those who rated themselves as poor or fair were collapsed into one category; those who rated themselves as good, very good, and excellent were also combined. Prior research has shown that such global measures of overall health are important predictors of morbidity and mortality (Bailis, Segall, & Chipperfield, 2003;

Table 15.2 Sample demographics and combat exposure

	Marital status groups		
	Married $N=1,956$ (%)	Never married $N=1,955$ (%)	Previously married $N=435$ (%)
Age			
18–19	1.2	8.1	1.4
20–24	33.4	69.7	36.5
25–29	31.0	17.8	27.3
30–39	30.7	4.3	30.7
≥40	3.6	0.1	4.2
Gender			
Female	1.7	2.5	6.0
Male	98.3	97.5	94.0
Rank			
Junior enlisted	41.7	79.0	50.2
NCOs	47.8	14.8	46.5
Officers	10.5	6.3	3.2
Parental status			
Yes	65.3	5.7	53.9
No	34.7	94.3	46.1
Education			
Some high school	0.4	0.4	0.0
GED/HS diploma	47.4	66.4	50.5
Some college	39.3	23.3	40.8
≥4 year degree	12.8	9.9	8.7
Race/ethnicity			
White	64.4	71.6	63.6
Black	16.5	10.4	17.2
Hispanic	12.1	10.3	11.8
Asian/Pacific Islander	2.4	3.6	2.3
Other	4.5	4.2	5.1
Mean combat exposure (range = 1–30)	15.97	16.32	16.24

DeSalvo, Bloser, Reynolds, He, & Munter, 2006). Medical care use was assessed with a question about the number of past month medical visits to a doctor or other medical professional for a physical condition. Lastly, 12 items from the Patient Health Questionnaire (PHQ-15) assessed somatic symptoms (Kroenke, Spitzer, & Williams, 2002). These 12 items were summed to create an index. Cronbach's alpha for the 12 items was 0.84, which is comparable to the 0.80 reported by Kroenke and colleagues 2002. The sum was dichotomized so that the lowest scores through the median were coded as low, and scores above the median were coded as high.

Three *mental health* measures assessed depression, anxiety, and post-traumatic stress disorder (PTSD). Depression was measured with the PHQ-9 (Kroenke & Spitzer, 2002), which assesses nine symptoms. Anxiety was measured using a seven-item subscale of the PHQ (Spitzer, Kroenke, & Williams, 1999). PTSD was

measured using the 17-item PTSD Checklist (PCL; Weathers, Litz, Herman, Huska, & Keane, 1993). The depression and anxiety measures also included an item on functional impairment from the PHQ and PHQ-9. Cut-offs for screening positive for depression, anxiety, and PTSD were consistent with procedures described by Hoge and colleagues (2004).

The three indicators of *risk behaviors* were alcohol misuse, illegal drug use, and aggressive behaviors. Past month alcohol misuse was measured by an adapted version of the two-item conjoint screen (TICS; Brown, Leonard, Saunders, & Papasoulitis, 1997). One question was asked about past month use of illegal drugs or substances and aggressive behavior was assessed with three questions asking about how often the respondent got angry with someone and kicked or smashed something; threatened someone with physical violence; or got into a fight with someone and hit the person. The aggressive behavior items were summed to create a scale with a Cronbach's alpha of 0.75. The sum was dichotomized so that the lowest scores through the median were coded as low, and scores above the median were coded as high.

Covariates included age, gender, rank, parental status, education, and combat exposure. Combat exposure was measured by 30 items, which asked whether soldiers had had various potentially traumatizing experiences. These items were recoded as yes/no and summed to create a combat exposure scale ranging from 0 to 30. It would have been elucidative to compare the findings across racial/ethnic groups; however, small sample sizes in some of these groups precluded such analyses and we did not simply want to dichotomize our sample into whites and non-whites because that division would likely obscure important within-group variations.

Analysis

Using logistic regression, the never married soldiers and the previously married soldiers were each compared to married soldiers across the measures of the three well-being domains. These analyses controlled for age, gender, rank, parental status, education, and combat exposure. The results of these analyses are presented by domains in the sections below, following reviews of relevant literature for each.

Physical Health

The majority of the studies that have examined marital status differences in well-being have focused on mental health. A few, however, have focused on physical health. In terms of general health, three studies appear to have asked respondents nearly the identical question used in the present study. The cross-sectional data from the Centers for Disease Control's National Health Interview Surveys reported

by Schoenborn (2004) indicate that for both men and women, the married were the least likely to report fair or poor health, followed by the never married, cohabitors, and separated/divorced individuals. Widowed individuals were most likely to report fair or poor health. These differences were more pronounced in younger age groups and narrowed considerably in those aged 65 and over.

Despite its large sample size ($N = 127{,}545$) and its national representativeness to the U.S. population, the results from Schoenborn's (2004) study may reflect typical limitations of cross-sectional data. Williams and Umberson (2004), with the aid of longitudinal data, were able to look at transitions between marital statuses. Their data indicate that self-assessed health of continuously never married and divorced respondents was not significantly different from that of continuously married respondents. In contrast to those who maintained their marital status across time points, those who transitioned into or out of marriage experienced differences in their self-assessed health. Specifically, men who transitioned into first marriages reported improved health and, men who transitioned from being married to being widowers reported poorer health. Among men who became divorced, older men reported poor health while younger men had improved health. None of these transitions significantly affected women's health.

The third study examined trend data between 1972 and 2003 (Liu & Umberson, 2008). These authors showed that the gap between the self-rated health of the married and the never married has narrowed, at least for men. In contrast, the gap in self-rated health between the married, on the one hand, and the separated, divorced, or widowed, on the other, has widened over time.

Some studies that have compared marital status differences in physical health have included specific indicators of mortality and morbidity such as ambulatory blood pressure (Holt-Lunstad, Birmingham, & Jones, 2008; Manzoli, Villari, Pironne, & Boccia, 2007). Holt-Lunstad and colleagues found that married individuals had better ambulatory blood pressure (cardiovascular health) compared to unmarried individuals, the majority of whom were never married (no gender differences were reported). When marital quality was considered, married individuals who reported low marital quality were similar to unmarried individuals. A subsequent study used cardiovascular fatality as the outcome variable and found that never married, separated/divorced, and widowed individuals of both genders were at higher risk for cardiovascular mortality than were married individuals (except for widows), even after adjustments for age and socioeconomic status (Molloy, Stamatakis, Randall, & Hammer, 2009).

We did not find any studies that contrasted reports of somatic complaints or medical care use across marital status groups. The studies we cited are inconsistent as to whether married individuals always have better physical health than other marital status groups. These differences may reflect methodological differences in terms of longitudinal data, the measurement of the outcome variables, how marital status groups are defined, and whether findings were adjusted for covariates. Nevertheless, we expect that married soldiers will report better physical health than either never married or previously married soldiers across all three measures of this domain.

Table 15.3 shows the results of the contrasts of physical health across the three marital status groups. Across the physical health measures, the results are not entirely as expected. Single soldiers had greater odds of reporting that they had good to excellent health, and reported fewer somatic complaints compared to married soldiers. Previously married soldiers were more likely than married soldiers to experience poor physical health in terms of number of somatic complaints. All the soldiers were comparable in terms of past month medical visits.

Mental Health

Studies that explicitly examine marital status differences in mental health may be divided into three subsets depending on whether they solely compare differences in well-being, whether they factor in marital quality, and whether they consider the effects of transitions into or out of a particular marital status. Generally, the first set of studies find a mental health advantage for the married over the previously married (Akhtar-Danesh & Landeen, 2007; Kessler, Bergluand, Demler, Jin, & Merikangas, 2005; Turner et al., 1995). However, the married may not always have a mental health advantage over the never married (see Kessler et al., 2005).

Both cross-sectional (Gove, Hughes, & Style, 1983) and longitudinal studies (Williams, 2003) have found that married individuals have better psychological well-being than other marital status groups, but only when they are happily married. These findings have been contradicted by data from longitudinal studies such as Kim and McKenry (2002), who found that while marital quality affects psychological well-being, it did not explain the advantage of the married compared to other status groups.

Studies that have focused on marital transitions use longitudinal data to assess movement in or out of marital status groups. Generally, these studies have found that individuals who transition out of marriage through divorce or widowhood have poorer mental health compared to stably married individuals (Kim & McKenry, 2002; Simon, 2002). The health advantage of stably married individuals also extends over the newly separated/divorced, those who remained separated/divorced, or the continuously never married (Kim & McKenry, 2002).

One study found that those transitioning out of marriage because of divorce experienced a pre-divorce elevation of psychological distress but that their post-divorce distress levels subsequently decreased to the levels of the consistently married individuals irrespective of whether a remarriage occurred (Booth & Amato, 1991). A later study showed that the short duration of elevated psychological distress of the divorced was only seen among individuals who entered another relationship and that among those who remained divorced, no improvements were observed in mental health over time (Johnson & Wu, 2002). Other studies have argued that it is important to consider how individuals' expectations and the presence or absence of children influence whether a marital loss is a negative or neutral experience, and whether marital gain is a positive one. Belief in the permanence

Table 15.3 Indicators of general and physical health

	General health			Past month medical visits			Somatic complaints		
	%Good to excellent	OR	CI	% 1 or more	OR	CI	% High	OR	CI
Married (reference)	77.8	1.00		51.2	1.00		50.8	1.00	
Never married	80.5	1.25*	1.01–1.54	50.4	0.94[a]	0.79–1.12	47.1	0.77*	0.64–0.91
Previously married	71.0	0.85[a]	0.65–1.09	53.6	0.95[a]	0.76–1.19	61.1	1.34*	1.06–1.69

Note: Odds-ratio (OR) are adjusted for gender, age rank, parental status, education, and combat experiences

*$p<0.05$

[a]N.S.

of marriage or having young children appears to moderate the negative effects of marital loss on mental health (Simon & Marcussen, 1999; Williams, Sassler, & Nicholson, 2008), whereas marital gains have a more positive effect on the mental health of individuals who place more importance on marriage (Simon & Marcussen, 1999).

The studies reviewed so far have been among civilian samples. Studies conducted using military samples vary on whether they found that married personnel report better mental health than one or more marital status groups. The Department of Defense (DoD) Health Behavior Survey (Bray et al., 2009), which is a population-based study of Active Component personnel, showed that a higher percentage of unmarried soldiers (including personnel living as single, widowed, divorced, or separated) screened positive for anxiety compared to those who were married with or without a co-resident spouse. Another study that used a sample of British Gulf War veterans found that divorced personnel had greater odds of having an anxiety disorder than married individuals, but that separated or cohabiting individuals were at no greater risk (Fiedler et al., 2006).

Married military personnel generally report lower levels of depression as well. The DoD survey (Bray et al., 2009) found that higher percentages of unmarried soldiers screened positive for depression compared to married soldiers with a co-resident spouse. However, married soldiers who lived apart from their spouses screened positive for depression at similar percentage levels as unmarried soldiers. Another study that used a sample of soldiers who had deployed to Operation Iraqi Freedom (OIF) and Operation Enduring Freedom (OEF) had similar findings. Separated and divorced soldiers, but not "single" (likely never married), had higher depression scores compared to married soldiers (Lapierre, Schwegler, & LaBauve, 2007).

Concerning PTSD, among OIF and OEF veterans who were seen at Department of Veterans Affairs facilities between 2001 and 2005, never married soldiers had the lowest risk of developing this disorder (Seal, Bertenthal, Miner, Saunak, & Marmar, 2007). While the risk ratios were modest, married, divorced, and separated/widowed soldiers all had increased risk of developing PTSD compared to the never married. Another study found similar results for "single" (likely never married) soldiers who had deployed to OEF, who had lower PTSD symptom scores than married soldiers (Lapierre et al., 2007). However, the "single" soldiers who had deployed to OIF were not statistically different from the married soldiers. In contrast, a British study of military personnel who also deployed to Iraq found that single soldiers had higher risk for developing PTSD (Iversen et al., 2008). Across both OIF and OEF, separated soldiers had higher PTSD symptom scores than married soldiers, but only divorced solders from OIF had higher PTSD scores compared to married soldiers (Lapierre et al., 2007).

Despite the complexity of the findings about marital status and mental health, the poorer health of separated and divorced individuals when compared to married individuals appears to be relatively robust. In terms of military populations, despite inconsistencies in marital status group definitions, the never married sometimes reported better mental health than the married and at other times, the reverse

occurred. In this study, we expect that previously married soldiers will be more likely to screen positive for depression, anxiety, and PTSD than married soldiers. However, we expect that never married soldiers will be comparable to married soldiers for all three outcomes. The results of our comparisons of group differences in mental health among soldiers are displayed in Table 15.4.

As expected, previously married soldiers were more likely to screen positive for depression, anxiety, and PTSD than were married soldiers. Their rates were about twice the rates of the other marital status groups. Never married soldiers were only comparable to married soldiers in terms of depression. They were actually less likely to screen positive for anxiety or PTSD than were married soldiers.

Risk Behaviors

Risk behaviors such as alcohol misuse, illegal drug use and aggressive behaviors vary across marital status groups as well. Overall substance use (including alcohol and illicit drug use) is lower for married individuals compared to nonmarried individuals, according to the National Survey on Drug Use and Health (SAMHSA, 2007) and the replication of the National Comorbidity Study (Kessler et al., 2005). Data show that married persons are less likely to be admitted for substance abuse treatment and have lower rates of substance dependence or abuse (SAMHSA, 2004, 2007, respectively).

Married individuals tend to misuse alcohol specifically at lower rates than their nonmarried counterparts according to results of large, epidemiological civilian studies. For example, Simon (2002) found that nonmarried adults (including never married, separated, divorced, and widowed persons) reported significantly more alcohol problems than married adults using data from the National Survey of Families and Households. In addition, results from the National Epidemiologic Survey on Alcohol and Related Conditions (Chen et al., 2006) demonstrated that married individuals exceeded standard weekly or both daily and weekly drinking limits at lower levels compared to never married, living as married, separated, divorced, or widowed individuals. These relationships also hold with young adults in particular; Horwitz and White (1991) found that married young adults reported fewer alcohol-related negative consequences, an outcome they used as a proxy for alcohol problems, compared to never married young adults.

The above research pertains to civilian samples; relationships between military marital status and alcohol consumption follow suit despite higher alcohol consumption within military samples compared to civilians, especially for the 18–25 age group (Bray et al., 2009). Data from the DoD Survey of Health Related Behaviors (Bray et al., 2009) show that nonmarried military personnel were significantly more likely to report heavy alcohol use in the past month compared to married personnel. This result was even more dramatic for Army personnel, with a larger percentage of nonmarried soldiers falling in the heavy alcohol consumption category compared to overall DoD percentages even after adjusting for sociodemographic differences.

Table 15.4 Indicators of mental health

	Depression			Anxiety			PTSD		
	% Screen positive	OR	CI	% Screen positive	OR	CI	% Screen positive	OR	CI
Married (reference)	7.1	1.00		8.8	1.00		14.6	1.00	
Never married	7.7	0.76[a]	0.56–1.04	7.8	0.64*	0.48–0.87	12.5	0.69*	0.53–0.89
Previously married	15.1	2.13*	1.52–2.99	16.3	1.74*	1.26–2.40	22.4	1.54*	1.14–2.08

Note: Odds-ratio (OR) are adjusted for gender, age rank, parental status, education, and combat experiences

*$p<0.05$

[a]N.S

Marital status also confers different levels of risk for illegal drug use. Anthony (1991) found that never married adults were over two times more likely to become new drug abuse or dependence cases compared to married adults. Similarly, in a national survey, Hoffman, Brittingham, and Larison (1996) found that married adults reported less current and prior year illicit drug use than their divorced, separated, or never married equivalents. Military research parallels the above civilian findings despite lower illicit drug use among military personnel in all age groups compared to civilian samples (Bray et al., 2009). Bray and colleagues (2006) found that non-married military personnel were more likely to report past-year illicit drug use compared to married military personnel. Similar to alcohol consumption, a greater percentage of nonmarried Army personnel used illicit drugs in the past year compared to overall DoD percentages after adjusting for sociodemographic differences.

Research on the relationship between marital status and aggressive behaviors is less widespread. Two studies found significant differences in physical aggression between marital statuses. In a study of the interplay of aggression, alcohol and marital status, married participants were significantly less likely to report involvement in recent verbal or physical aggression (either as aggressor or victim) compared to nonmarried, divorced/separated, or widowed participants (Wells, Graham, & West, 2000). In a related study, Wells and Graham (2003) found that more never married adults were involved in a physical aggression in the past year compared to married and cohabitating adults.

The studies above consistently point to married individuals demonstrating fewer risk behaviors compared to nonmarried persons. Thus, we expect married soldiers to report lower alcohol misuse and illegal drug use and fewer aggressive behaviors than either never married or previously married soldiers.

As displayed in Table 15.5, married soldiers were less likely to report risk behaviors overall. Both never married and previously married soldiers were over two times more likely to report past month alcohol misuse compared to married soldiers. Previously married soldiers were also over two times more likely to report past month illegal drug use compared to married soldiers; however, this result was not found for never married soldiers. Never married and previously married soldiers were no more or less significantly likely to report aggressive behavior compared to married soldiers.

Discussion and Conclusion

The sample used in this study is decidedly distinct from the civilian samples on which most of the existing research is based. Our respondents have been exposed to potentially traumatizing events while combat-deployed. It is known that trauma is a very potent trigger of poor well-being and that individuals with more disadvantaged statuses appear to be exposed to greater numbers of traumatic events (Pearlin et al., 2005). Trauma may also have contagion effects in that exposure to trauma makes one more vulnerable to subsequent traumas (Pearlin et al., 2005).

Table 15.5 Indicators of risk behaviors

	Alcohol misuse			Illegal drug use			Aggressive behavior		
	% Yes	OR	CI	% Yes	OR	CI	% Above median	OR	CI
Married (reference)	20.0	1.00		1.8	1.00		37.2	1.00	
Never married	37.8	1.98*	1.63–2.42	4.9	1.47[a]	0.94–2.39	47.3	1.05[a]	0.87–1.26
Previously married	42.2	2.79*	2.19–3.54	5.1	2.44*	1.36–4.37	45.6	1.27[a]	1.00–1.62

Note: Odds-ratio (OR) are adjusted for gender, age rank, parental status, education, and combat experiences

*$p<0.05$

[a]N.S.

Little is known about the nature of the relationship between marital status and combat exposure.

Earlier we asked whether single soldiers are more susceptible to developing physical or mental health problems or engaging in risky behaviors after a deployment. The answer to this question depends on the definition of a "single" soldier. If we define a single soldier as a never married soldier, then the answer is that single soldiers are actually less likely than married soldiers to report mental or physical health problems. But, never married soldiers are more likely to report engaging in alcohol misuse. It is notable that single soldiers (all unmarried soldiers) are not a monolithic group. A subset of this group – the previously married – are more likely than married soldiers to report somatic complaints, mental health problems, and alcohol misuse.

The data reported here suggest that having a spouse may have both deleterious and beneficial effects on well-being. This study showed that married soldiers appear to have poorer physical health and poorer mental health (anxiety and PTSD) compared to never married soldiers, but not previously married soldiers. However, married soldiers reported lower rates of risky behaviors than the other groups of soldiers.

These are tentative conclusions because of the limitations of our data. One such limitation is the cross-sectional design of the study. We were unable to assess transitions in or out of marital statuses. Williams and Umberson (2004) suggest that combining all divorced or all married respondents into homogenous groupings likely masks differences within those groups. For example, are the stably divorced qualitatively different from the recently divorced? We do not know whether separations or divorces predated the combat deployment, occurred because of the deployment separation, or because of poor post-deployment adjustment. Consequently, we cannot answer the question posed by crisis theory that the poorer health of previously married individuals is temporary and that once the marital dissolution crisis is over, the health of those that transition out of marriage will return to normative levels.

We, however, have some evidence to assess which of the other two theoretical assertions held up with these analyses. Our data support both the social causation hypothesis and the social selection hypothesis. Marriage may buffer soldiers from experiencing negative consequences of combat exposure relative to other marital status groups, but it does not appear to be universally protective. We demonstrated that previously married soldiers are at greater risk than either married or never married soldiers for developing physical and mental health problems. Perhaps having experienced marital loss increases one's exposure to stressors or makes one more vulnerable to the negative effects of trauma exposure. Alternatively, the soldiers who are separated or divorced could be poor marriage material. Their poorer health may not be a consequence of the dissolution of their marriages but an antecedent. Longitudinal data is needed for more definitive conclusions.

Cohabitation in the United States has increased substantially in recent years. Cohabitors now comprise 10% of the number of opposite-sex couples (U.S. Census Bureau, 2009). This data has undoubtedly influenced the researchers who have

begun to include cohabitors as a marital status group. However, we are also unable to contribute cohabitation data because the marital status item in this study did not include an option for respondents to indicate that they were living with a partner to whom they were not married. Consequently, we cannot compare the well-being of this group to married individuals. There is reason to suspect that cohabitation rates may be lower in the military than in the civilian population, especially in Active Component populations. There are strong incentives to get married in the military including stipends for dependents and housing allowances (Lemmon, Whyman, & Teachman, 2009). Lemmon and colleagues found that Active Component service members are more likely than either civilians or Reserve Component service members to marry their cohabiting partner. This indicates that cohabitation, when it occurs, may also be a shorter-term phenomenon in military populations. Official data on cohabitation rates are unavailable because as of yet the Army does not collect such data.

Overall, marital status and well-being in post-deployment soldiers relate differentially depending on specific outcome and status group. Because previously married soldiers demonstrated lower levels of mental well being, and general health along with higher levels of substance use and misuse, this subpopulation can be targeted for post-deployment interventions. Future research should determine whether this sample is at risk only during the transition from married to divorced or widowed to know when such interventions would be most beneficial.

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Chapter 16
The Single Service Member: Substance Use, Stress, and Mental Health Issues

Robert M. Bray, James L. Spira, and Marian E. Lane

Abstract This chapter examines health behaviors of single service members in relation to married service members residing with their spouses and married service members who have deployed without their spouses. Findings drawn from the 2005 Department of Defense (DoD) Survey of Health Related Behaviors Among Active Duty Military Personnel (HRB Survey) show that single service members are at highest risk for substance use and mental health issues. In addition, married service members stationed in locations where they are not able to be accompanied by their spouses (e.g., deployments to combat locations, unaccompanied tours) begin to behave like single service members with regards to higher levels of alcohol, drug, and tobacco use and show similar mental health issues including rates of depression, posttraumatic stress, and suicidal behaviors. Policy implications for addressing these issues are also discussed.

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Introduction

The last 5 years has shown a greater degree of attention being given to the stress experienced by deployed service members than ever before. This is no doubt due to what the U.S. military has learned about substance use and mental health

R.M. Bray (✉)
RTI International, Behavioral Health and Criminal Justice Division, 3040 Cornwallis Road, Research Triangle Park, NC, 27709, USA
e-mail: rmb@rti.org

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challenges following Vietnam, the incidence of psychological injuries occurring during the Middle East conflicts, the cost of treating those with illness and injury, and the need to maintain healthy armed forces, among other factors. Part of this attention has been a focus on the mental health and substance use of service members, including health-related behaviors (Bray & Hourani, 2007; Bray et al., 2009; Department of Defense Task Force on Mental Health, 2007; Hoge, Auchterlonie, & Milliken, 2006; Hoge et al., 2004; Hourani et al., 2007; Hourani, Williams, & Kress, 2006). What has been lacking from this analysis, however, is a serious consideration of the role of marital status on service members' mental and behavioral health.

The mental and physical health of service members is of great concern to the military, because it affects military readiness and performance, retention, and health-care costs. Therefore, it is of interest whether single service members have different mental and behavioral health issues than their married counterparts, because this knowledge could lead to more targeted mental and public health interventions. Of additional interest are the implications and challenges of being separated from one's spouse and family and how that influences the behavioral and mental health of service members and their families. The key issue is whether family life plays a positive role in boosting service members' resilience and whether that is more challenging to achieve among single service members or married service member serving in an unaccompanied status.

The prevalence of negative mood (depression, anxiety) and lifestyle (alcohol, drug, and tobacco use) in service members has recently been examined (Bray et al., 2006, 2009, for active component personnel; Hourani et al., 2007, for reserve component personnel). The influence of marriage on mood and lifestyle has also been reported in the civilian sector (Duncan, Wilkerson, & England, 2006; Kiecolt-Glaser & Newton, 2001; Kim & McKenry, 2002). What has not been previously reported is the effect that being married and being accompanied by one's spouse at the duty location has on these behaviors. In this chapter, we examine the role marital status has on mood and lifestyle. Although the influence of social support on health has long been known (Berkman & Syme, 1979; Cohen & Wills, 1985; Heinz, Wu, Witkiewitz, Epstein, & Preston, 2009; House, Robbins, & Metzner, 1983; Merline, O'Malley, Schulenberg, Bachman, & Johnston, 2004; Shaw, Fields, Thacker, & Fisher, 1993; Taylor, 2006), the precise manner in which social support manifests itself in active duty military personnel has not been examined.

Family separations are a part of military life. Whether due to basic training, noncombat deployments within the United States or abroad, or combat deployments, all military families have to cope with separations ranging from months to years. Separations have become longer over the past decade (Defense Manpower Data Center, 2007), but at the same time, the ability to stay connected to those at home has increased with the availability of communications technology. This has the positive effect of keeping ties strong, but also can add to stress for deployed service members who may feel relatively helpless to assist with stressors back home. Families of junior enlisted personnel have the greatest difficulty adjusting to deployments (Orthner & Rose, 2005).

Post-deployment reintegration has also proven to be a difficult adjustment period. More than one-third of spouses report that returning service members have

changes in mood and difficulty disciplining children, reestablishing roles, and communicating with their spouses (U.S. Army Community and Family Support Center, 2005). The more stress and emotional distress the service members experienced during deployment, the more difficult they find the readjustment (Rosen, Durand, Westhuis, & Tellebaum, 1995). Readjustment problems post-deployment can have dire consequences not only for the service members, but also for their family members (Gibbs, Martin, Kupper, & Johnson, 2007). Therefore, understanding factors that contribute to both combat and non-combat deployment stress is important in formulating policies to reduce such stress and its consequences.

With the exception of combat deployment, service members serve either with or without their spouses. Therefore, the relative impact of being single, being married and being accompanied by one's spouse, or being geographically separated from one's spouse can be examined for their contribution to mental and behavioral health. Such an examination forms the basis of this chapter.

Methods

To discover the impact of marital status and deployment on service member lifestyle and psychological distress, we analyzed data from the 2005 Department of Defense (DoD) Survey of Health Related Behaviors Among Active Duty Personnel (HRB Survey) (Bray et al., 2006).

Sampling Design

The eligible population for the HRB Survey consisted of all active duty military personnel except recruits, service academy cadets, persons absent without official leave (AWOL), and persons who had a permanent change of station (PCS) at the time of data collection. A two-stage probability design was used. In the first stage, a random sample was selected of 60 military installations worldwide, stratified by service and region of the world. In the second stage, active duty personnel, stratified by pay grade and gender, were randomly selected without replacement at the participating installations. Military pay grades for enlisted personnel were grouped in ascending order of rank as E1 to E3, E4 to E6, and E7 to E9. Pay grades for officers and warrant officers were grouped as O1 to O3, O4 to O10, and W1 to W5. Officers and women were oversampled because of their smaller numbers.

The final sample for the study consisted of 16,146 participants, which resulted in a response rate of 51.8%. Response rates also varied substantially with respect to gender (females higher than males), rank (officers higher than enlisted), and service (Air Force higher than other branches). As a result, the respondent distribution was composed of a higher percentage of females, officers, and members of the Air Force when compared to the original sample distribution. These differential response-rate patterns combined with differential answer patterns to the questionnaire

represent a potential for nonresponse bias. For example, an estimate of the prevalence of drug use among junior enlisted personnel would be biased if females responded at a higher rate and reported lower levels of drug use compared to males. To avoid this, the data were weighted to represent the population of eligible active-duty personnel, and adjustments were made for the potential biasing effects of differential nonresponse. Post-stratification methods were used to develop the nonresponse adjustment factors. Updated counts of military personnel were obtained from personnel records at Defense Manpower Data Center, and observed eligibility rates were applied to these new personnel counts for the sampling strata defined by the intersection of service, region, gender, and pay grade groups. (Some strata were collapsed due to small sample sizes.) Adjustment factors were then calculated and applied to the weights to correct for differences in the proportion responding in the sample relative to the proportion in the population. Additional details on sampling procedures and design are contained in the survey's final report (Bray et al., 2006).

Data Collection

A two-phase data collection procedure was followed. Phase 1 consisted of onsite administration of anonymous self-report questionnaires by civilian data collection teams. Questionnaires took an average of 55 min to answer. Phase 2 consisted of mailing questionnaires to persons not attending onsite administration and to personnel in remote duty locations. All questionnaires were accompanied by information explaining the purpose and anonymity of the survey. Most of the data (90%) were obtained from the group sessions.

Key Measures

The questionnaire covered a broad range of topics, including background characteristics, substance use (i.e., alcohol, tobacco, illicit drug use), and mental health indicators. For this chapter, the key background measure of interest is family status, defined in terms of marital status and spousal presence or absence at the duty location. Personnel were categorized into three groups:

- *Not married* – service members living as single, widowed, divorced, or separated; it also included persons who reported that they were living with a fiancé, boyfriend or girlfriend, but not married.
- *Married, spouse not present* – service members who were legally married, but whose spouses were not living with them at their duty location (i.e., they were unaccompanied, sometimes referred to as "geographically separated").
- *Married, spouse present* – service members who were legally married and living with their spouse.

Deployment experience was an additional key cross-classification measure. This was defined as a dichotomous measure contrasting persons who had been deployed one or more times in the past 3 years to those who had not been deployed during this period. Thus, this was not a measure of current deployment, but rather an indication of how deployment history was related to recent substance use and mental health indicators.

Other background and military characteristics served as covariates or control variables in the analyses. These included service branch, gender, age group, pay grade (rank), education, and race/ethnicity.

The outcome measures included heavy alcohol use, illicit drug use, any cigarette use, heavy cigarette use, high work and family stress, depression, anxiety, likely posttraumatic stress disorder (PTSD), mental health problems limiting usual activities, and suicidal ideation and attempts. These were defined as follows:

- *Heavy alcohol use* – five or more drinks per occasion at least once per week
- *Illicit drug use* – use during the past 30 days of marijuana/hashish; phencyclidine (PCP), lysergic acid diethylamide (LSD), or other hallucinogens; cocaine; amphetamines or other stimulants; tranquilizers or other depressants; barbiturates or other sedatives; heroin or other opiates; analgesics or other narcotics; inhalants; designer drugs; anabolic steroids; or gamma hydroxybutyrate (GHB)
- *Any cigarette use* – smoked one or more times in the past 30 days and at least 100 cigarettes during the lifetime
- *Heavy cigarette use* – smoked a pack or more of cigarettes per day during the past 30 days
- *High work stress* – those reporting a lot of stress experienced while carrying out their military duties
- *High family stress* – those reporting a lot of stress experienced in their family life or in a relationship with their spouse; live-in fiancé, boyfriend, or girlfriend; or the person they date seriously
- *Depression* – measured with the three-item Burnam-A screen, those who meet two criteria: depressed for at least a full day in the past week, *and* either depressed for 2 or more weeks in the past 12 months or depressed in the past 12 months and on most days for 2 or more years
- *Anxiety* – measured by self-report with items from the Patient Health Questionnaire to screen for generalized anxiety disorder using criteria of three or more symptoms on more than half of the days in the past 30 days
- *PTSD* – measured by self-report PCL-C screening scale using a cut-off of 50 or higher
- *Mental health problems limiting usual activities* – personnel reporting that poor mental health kept them from doing their usual activities, such as work or recreation, on 11 or more days during the past 30 days
- *Suicidal ideation* – those defined as personnel reporting they had ever seriously considered suicide in the past year
- *Suicide attempts* – those defined as personnel reporting they had ever attempted suicide in the past year

Analytic Approach

The SUDAAN software for the statistical analysis of correlated data in complex survey designs was used to develop prevalence estimates and standard errors of the estimates (RTI, 2008). Data were weighted to represent the active duty population and to account for nonresponse adjustment (as discussed above). Statistical significance for these data was assessed using *t* tests; tests resulting in $p < 0.05$ were flagged as statistically significant in tables and figures. Some of the differences in rates are likely a function of differences in sociodemographic composition among groups. To take into account these sociodemographic differences, adjusted estimates were computed using direct standardization (Kalton, 1968) to adjust the prevalence rates and to construct the rates that would be expected if each group were to have the gender, age, education, race/ethnicity, and pay grade distribution of the total population.

The analyses examined three main questions concerning family status in the active duty force:

1. What is the influence of family status on substance use?
2. What is the influence of family status on work and family stress?
3. What is the influence of family status on mental health?

Results

Table 16.1 presents the sociodemographic characteristics of the eligible population for the 2005 HRB Survey. These estimates are based on data from the sample respondents that were weighted and post-stratified to represent the eligible population. As noted, the eligible population included all active duty personnel except recruits, service academy students, personnel who were AWOL, and personnel who had a PCS at the time of data collection. Separate data not shown indicate that the eligible population included the large majority of total active duty personnel (1,011,852 of the 1,300,039 active-duty personnel, or 77.8%). Nonetheless, because the eligible population omits some groups, its characteristics may differ somewhat from those of the total active duty force. For the most part, however, such differences are expected to be relatively small and random.

As shown in Table 16.1, the majority of personnel in the eligible population were male (85.2%), white non-Hispanic (64.4%), educated beyond the high school level (66.1%), aged 34 or younger (77%), and in pay grades E1 to E6 (73.6%). In addition, the majority of respondents (56.3%) had been deployed one or more times in the past 3 years. Of note, at the time of the survey, 45.8% of service members were not married, 6.3% were married but geographically separated from their spouse, and 47.8% were married and living with their spouse.

Table 16.1 Sociodemographic characteristics of the participant population

Sociodemographic characteristic	*N*	Percentage[a]
Gender		
Male	12,119	85.2 (0.7)
Female	4,027	14.8 (0.7)
Race/ethnicity		
White, non-Hispanic	9,855	64.4 (1.2)
African American, non-Hispanic	2,633	17.6 (1.0)
Hispanic	2,004	8.8 (0.5)
Other	1,654	9.2 (0.6)
Education		
High school or less	4,309	33.9 (1.5)
Some college	7,023	44.1 (1.3)
College grad or more	4,814	22.0 (1.7)
Age		
20 or younger	1,298	14.1 (1.1)
21–25	4,300	32.6 (1.2)
26–34	4,312	30.3 (1.0)
35 or older	6,236	23.1 (1.4)
Pay grade		
E1–E3	2,593	24.0 (1.7)
E4–E6	6,376	49.6 (1.8)
E7–E9	3,221	9.7 (0.8)
W1–W5	399	1.0 (0.1)
O1–O3	1,444	9.4 (1.0)
O4–O10	2,113	6.3 (0.8)
Deployment status (past 3 years)		
Not deployed	6,503	43.7 (2.7)
Deployed 1 time	4,656	30.1 (1.6)
Deployed two times	2,425	14.5 (0.9)
Deployed three or more times	1,924	11.7 (1.1)
Family status		
Not married	6,138	45.8 (1.4)
Married, spouse not present	1,265	6.3 (1.0)
Married, spouse present	8,579	47.8 (2.3)

[a]For analysis purposes, data were weighted to reflect the proportional representation of respondents in the population. Weighted percentages are shown with the standard error of each estimate in parentheses

Question 1: What Is the Influence of Family Status on Substance Use?

Figure 16.1 provides data on the first research question. It shows the overall averages for family status (independent of deployment). Single service members and service members whose spouses were not present had a significantly increased prevalence of heavy alcohol use, illicit drug use, and any cigarette smoking (significant only for single service members) than did married service members whose spouses were

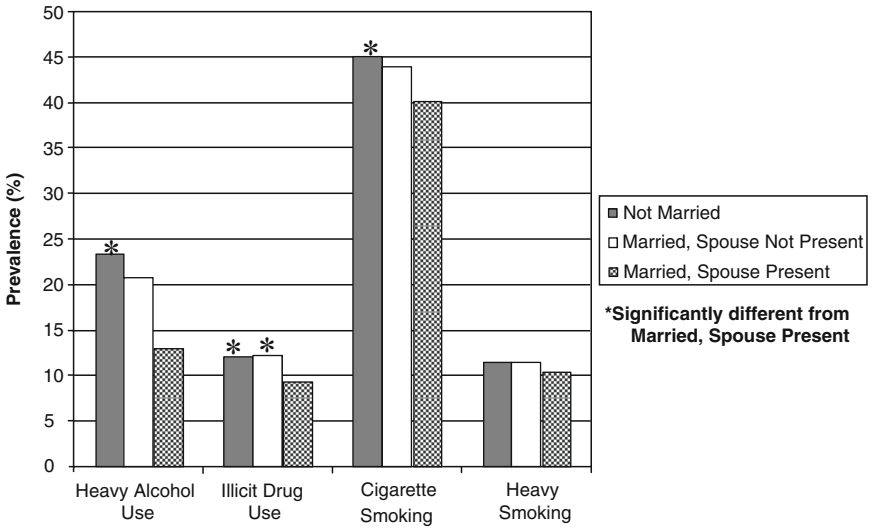

Fig. 16.1 Family status comparisons: substance use

present. Marital status had no effect on heavy smoking. For the most part, single service members had the highest risk of substance use. Those who were married with their spouses not present behaved very similarly to those who were single.

Table 16.2 shows the effect of family status on these same substance use indicators, organized by whether service members had been deployed one or more times during the past 3 years. Prior deployment experience resulted in elevated rates of substance use for many of the groups. Specifically, heavy alcohol use was significantly higher among those who had been deployed relative to not deployed for married personnel with spouse not present, but not for the other two groups. Illicit drug use was higher among those with prior deployments for single service members and those who are married but unaccompanied by their spouses. Any cigarette use and heavy cigarette use was significantly higher among those with prior deployments for single personnel and for married personnel with spouse present.

Overall, single previously deployed service members were at greatest risk of substance use, whereas the lowest risk was among personnel who were married, whose spouses were present, and who had not been deployed.

Question 2: What Is the Influence of Family Status on Work and Family Stress?

Figure 16.2 shows the marginal means for family status (independent of deployment). Family status had no effect on work stress. However, as would be expected, being geographically separated from one's spouse led to greater family stress than either being single or having one's spouse present.

Table 16.2 Family status comparisons: substance use by deployment experience

	Not married		Married, spouse not present		Married, spouse present	
Measure	Deployed 1+ times	Not deployed	Deployed 1+ times	Not deployed	Deployed 1+ times	Not deployed
Heavy alcohol use	24.0 (1.0)[a,b,c]	21.8 (1.4)[a,b,c]	22.7 (1.7)[a,b,c]	17.2 (2.8)[d,e,f]	13.3 (1.0)[d,e,f]	12.0 (2.2)[d,e,f]
Illicit drug use	11.2 (0.9)[a,b,c,e]	9.0 (0.7)[d,f]	13.1 (1.9)[a,b,c,e]	7.1 (1.2)[d,f]	8.2 (0.8)[d,f]	8.4 (0.8)[d,f]
Cigarette smoking	46.5 (1.3)[a,b,c,e]	42.0 (1.9)[d]	44.7 (3.0)[c]	40.5 (3.5)[d]	41.9 (1.5)[c,d]	37.1 (2.4)[b,d,f]
Heavy smoking	12.7 (1.0)[c,e]	9.4 (1.2)[d]	10.7 (2.1)	11.8 (2.3)	11.2 (0.9)[c]	8.6 (1.3)[b,d]

Note. Table displays the percentage of personnel who reported the substance use issues indicated in the rows of this table. The standard error of each estimate is presented in parentheses. Estimates are shown as adjusted estimates that have been standardized to gender, race/ethnicity, education, age, pay grade, and service

[a]Indicates estimate is significantly different from the estimate in column #4 (married, spouse not present; not deployed) at the 95% confidence level
[b]Indicates estimate is significantly different from the estimate in column #5 (married, spouse present; deployed 1+ times) at the 95% confidence level
[c]Indicates estimate is significantly different from the estimate in column #6 (married, spouse present; deployed 1+ times) at the 95% confidence level
[d]Indicates estimate is significantly different from the estimate in column #1 (not married, deployed 1+ times) at the 95% confidence level
[e]Indicates estimate is significantly different from the estimate in column #2 (not married, not deployed) at the 95% confidence level
[f]Indicates estimate is significantly different from the estimate in column #3 (married, spouse not present; deployed 1+ times) at the 95% confidence level

Fig. 16.2 Family status comparisons: stress

Table 16.3 shows family status separated by deployment for stress (and mental health, as discussed below). Prior deployment was associated with increased work stress for single service members and for those who were married and whose spouses were present, but interestingly not for those who were married and whose spouses were not present. In addition, prior deployment also had the effect of increasing family stress on single service members.

Question 3: What Is the Influence of Family Status on Mental Health?

Figure 16.3 provides information about family status, independent of deployment, for a range of mental health indicators: need for further depression evaluation, anxiety evaluation, need for further PTSD evaluation, mental health issues limiting usual activities, and suicide ideation and attempts. Compared to married service members residing with their spouses, single service members had increased prevalence of depression, PTSD, mental health issues that limited usual activities, suicidal ideation, and attempted suicide. Like single service members, married service members who were geographically separated from their spouses had elevated prevalence of depressive symptoms and attempted suicide.

In addition to the indicators of stress discussed above, Table 16.3 shows family status separated out by prior deployment status for indicators of depression, anxiety, PTSD symptoms, mental health problems limiting usual activities, suicidal ideation, and attempted suicide. For the first three measures, percentages indicate those who met relatively conservative criteria suggesting the need for further evaluation. Prior deployment experience showed effects on only depression and suicide

Table 16.3 Family status comparisons: stress and mental health issues by deployment experience

	Not married		Married, spouse not present		Married, spouse present	
Measure	Deployed 1+ times	Not deployed	Deployed 1+ times	Not deployed	Deployed 1+ times	Not deployed
High work stress	34.8 (1.3)[a,b]	28.6 (1.4)[c,d]	31.6 (2.6)	33.9 (3.3)	34.8 (1.1)[a,b]	30.2 (1.6)[c,d]
High family stress	19.5 (0.6)[a,b,e,f]	16.8 (0.8)[c,d,e,f]	26.6 (3.0)[a,b,c,d]	26.3 (2.6)[a,b,c,d]	20.0 (1.1)[a,e,f]	17.1 (1.1)[c,e,f]
Need for further depression evaluation	25.7 (1.0)[a,b,d]	22.3 (1.1)[b,c,f]	26.4 (3.0)[b,d]	28.2 (1.8)[a,b,d]	19.9 (1.0)[b,c,e,f]	17.4 (1.2)[a,c,d,e,f]
Met screening criteria for anxiety symptoms	12.8 (0.7)	11.5 (0.9)	15.8 (2.0)	12.5 (2.1)	13.6 (1.4)	11.6 (0.9)
Need for further PTSD evaluation	7.8 (0.7)[b]	6.4 (0.8)[b]	9.3 (1.6)[b]	6.5 (2.4)	6.2 (0.8)	4.5 (0.8)[a,c,e]
Limited usual activities	3.7 (0.4)[b,d,e]	2.9 (0.7)	2.3 (0.7)[c]	3.2 (1.4)	2.4 (0.4)[c]	2.0 (0.4)[c]
Suicidal ideation	6.6 (0.6)[b,d]	4.8 (0.6)	5.2 (1.2)	5.7 (2.2)	3.8 (0.6)[c]	3.5 (0.5)[c]
Attempted suicide	1.4 (0.2)[a,b,d]	0.5 (0.2)[c]	1.3 (0.7)	0.8 (0.4)	0.2 (0.1)[c]	0.6 (0.3)[c]

**Note.* Table displays the percentage of personnel who reported the stress and mental health issues indicated in the rows of this table. The standard error of each estimate is presented in parentheses. Estimates are shown as adjusted estimates that have been standardized to gender, race/ethnicity, education, age, pay grade, and service

[a]Indicates estimate is significantly different from the estimate in column #2 (not married, not deployed) at the 95% confidence level

[b]Indicates estimate is significantly different from the estimate in column #6 (married, spouse present; not deployed) at the 95% confidence level

[c]Indicates estimate is significantly different from the estimate in column #1 (not married, deployed 1+ times) at the 95% confidence level

[d]Indicates estimate is significantly different from the estimate in column #5 (married, spouse present; deployed 1+ times) at the 95% confidence level

[e]Indicates estimate is significantly different from the estimate in column #3 (married, spouse not present; deployed 1+ times) at the 95% confidence level

[f]Indicates estimate is significantly different from the estimate in column #4 (married, Spouse Not Present; Not Deployed) at the 95% confidence level

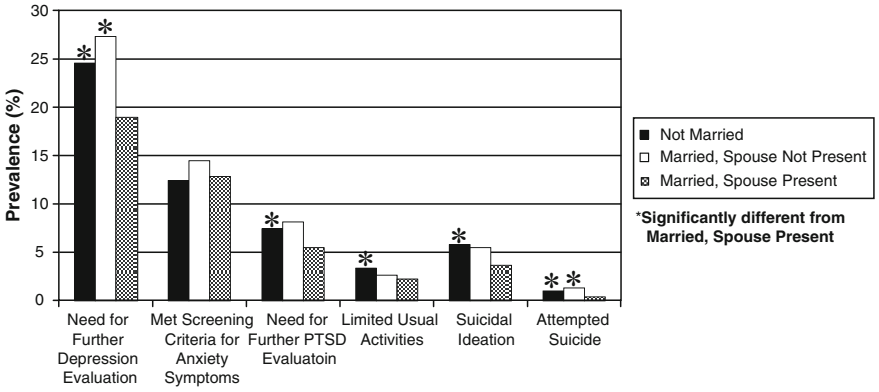

Fig. 16.3 Family status comparisons: mental health

attempts for single service members and those who were married with their spouses present, but no significant difference was found for anxiety, PTSD, mental health problems limited usual activities, or suicidal ideation. Prior deployment was associated with elevated depressive symptoms for single service members and for married service members residing with their spouses, but not for geographically separated married service members. Deployment was associated with higher rates of attempted suicides for single service members, but not for the other two groups.

Discussion

This chapter presents the first analysis of single service members compared to married service members deployed with or without their spouses, as well as the interaction of deployment and marital status on substance use, stress, and mental health issues. The findings can be summarized as follows:

- *Substance Use*: Single and unaccompanied married (i.e., geographically separated) personnel have higher rates of heavy alcohol use and illicit drug use than their counterparts who are married and residing with their spouses. Single service members also have higher rates of cigarette smoking than married accompanied personnel. Most outcomes were higher among those who had deployed than among those who had not. In general, deployed single service members had the greatest problems with substance use.
- *Stress*: Work stress is higher than family stress, and family status groups appear to be similar with regard to work stress. Unaccompanied married personnel have higher levels of family stress compared to single personnel and married personnel residing with their spouses. Prior deployment was associated with elevated rates of work stress for single personnel and for married service members residing with their spouses. Deployment was also associated with high family stress for single personnel, but not for the other two groups.

- *Depression Symptoms*: Single and geographically separated married personnel both showed a higher need for further depression evaluation than married service members residing with their spouses. Prior deployment was associated with further exacerbation of depressive symptoms in single and accompanied married service members.
- *PTSD Symptoms*: Single personnel have a higher need for further PTSD evaluation than married service members residing with their spouses. Prior deployment had no impact on these symptoms.
- *Suicidal Behavior*: Single personnel have a rate of higher suicide ideation and attempted suicide than those who were married and residing with their spouses. In additional, for attempted suicide, married service members whose spouses were not present had higher rates those whose spouses were present. Deployment increased suicidal attempts among single service members.
- *Limited Usual Activity Due to Mental Health Issues*: Mental health issues tended to limit usual activities more in single services members compared to married personnel residing with their spouses.

Compared to married service members, being single is a risk factor in terms of dysphoria and recreational substance use. When unaccompanied by their spouses, service members appear to revert to a single member's lifestyle and greater risk of stress and depression. For several factors, having been deployed was associated with further exacerbations of symptoms. Given that respondents to this survey were asked to report their number of deployments within the past 3 years, these results probably represent an underreporting of the magnitude of these problems that would be seen during or shortly after deployment. The current findings most likely represent a lingering effect from the changes that occur during deployments. This is of considerable concern in that it suggests that these effects may be much more long lasting than might be expected. If so, it suggests the need for sustained services following deployments and other tours that separate families.

Possible Mechanisms Underlying the Behavior of Single Service Members

Given the consistent pattern seen in these findings, it is of interest to consider potential factors underlying the behaviors observed. Although it is no surprise that younger single service members behave differently than older married personnel, our analyses controlled for age and other sociodemographic factors. Although one could propose that marriage typically brings new responsibilities and increased maturity, for the most part, married service members who were on tours unaccompanied by their spouse behaved much like single service members across most dimensions. Therefore, the differences observed must be due to factors other than age and the potential responsibilities that marriage itself brings about. The factor that distinguished single service members and geographically separated service

members from those who were serving with their spouses was the presence of a spouse and the influence that has on their behavior.

The presence of spouses remains a powerful protective factor buffering married service members against mental health and substance use problems. Given the propensity of literature of the protective factors of marriage (Cohen & Wills, 1985; Duncan et al., 2006; Kiecolt-Glaser & Newton, 2001; Kim & McKenry, 2002), the continued presence of a spouse is the likely explanation for the protective effects revealed in these data. What is it about the presence of a spouse that leads to such differences in behavior? Marriage has the potential to control substance use (Heinz et al., 2009; Merline et al., 2004). Living with a spouse involves being mutually accountable, which may be why this reduces the likelihood of excessive use of recreational substances.

Loneliness during deployment may be another factor responsible for both recreational substance use and mental health issues. Being separated from one's usual social network and family can drive one to form new relationships with others in one's situation. For single service members, this would most likely include other singles, possibly also newly deployed, and for those deploying without one's spouse, this could also mean seeking out singles. From civilian studies, we know that the ways singles connect at social events are often different than the ways couples connect with others (frequently with other couples), with the former involving greater use of recreational substances (Taylor, 2006).

Coping style is another possible factor explaining our results. We also know from civilian studies that adolescents and those with chaotic backgrounds, both prevalent among military recruits, have been shown to rely more on external structure and avoidant coping styles as opposed to active internal problem-solving coping skills (Joseph, Williams, & Yule, 1992). This style of coping is associated with increased substance use (Johnsen, Laberg, & Eid, 1988; Ong & Joseph, 2008). Displacement from a structured home environment may lead those who tend to rely on external structure to seek external support that includes recreational substance use (Dolan & Ender, 2008). Indeed, external coping styles often manifest during times of lifestyle disruption (Shaw et al., 1993). Given these possible factors, policy makers may wish to consider healthy external supports for displaced single or geographically separated married service members.

Limitations

This chapter presents an initial view of mental and behavioral health factors in service members arrayed by marital and prior deployment status. However, in evaluating these findings, several limitations should be acknowledged.

First, the 2005 HRB Survey did not distinguish between combat and non-combat deployment, and it is unclear what effect this would have on post-deployment mental and behavioral health. For example, stress is typically much higher during combat deployments. It is also unclear exactly when the service members were deployed in

relation to when the health behaviors were assessed. However, a consistent pattern has emerged revealing that, independent of other demographic factors controlled in our analyses, single service members have more mental health and behavioral problems than do married service members whose spouses accompany them on deployment, and geographically separated married service members appear to behave more like single service members than like married service members residing with their spouses.

Second, several groups comprised single service members that were not distinguished in our analyses: single, never married, and not living as married (72%); widowed and not living as married (0.3%); divorced and not living as married (11.4%); separated and not living as married (5.7%); and living as married, but not married (10.5%). It is possible that classification of singles into finer subcategories may yield additional information about single service members' substance use behavior and mental health status. Nonetheless, because the single, never married, and not living as married component accounts for nearly three quarters of the single group, their behavior is the driver of our findings for single service members.

Third, the survey had a response rate of 52%, which raises the possibility of potential bias in the estimates, because persons who did not take part may have been more likely to engage in the behaviors of interest than those who did take part. We attempted to address this issue by using the weight adjustments described in the methods section, but that may not have completely ruled out all potential bias.

Fourth, because some of the behaviors we asked about were sensitive issues, participants may have been reluctant to provide accurate information, resulting in underreporting of these behaviors. To help address that limitation, we designed our procedures around findings of studies of the validity of self-reports on drug use (Harrison, 1995; Rouse, Kozel, & Richards, 1985). A general conclusion emerging from these reviews is that most people appear to be truthful when they believe that the research has a legitimate purpose, when they have suitable privacy for providing answers, when they have assurances that answers will be kept confidential, and when they believe that those collecting the data can be trusted (Harrison, 1995; Johnston & O'Malley, 1985). We encouraged honest reporting in the following ways: (1) questionnaire responses were anonymous – personnel did not put their names or social security information on the questionnaire; (2) civilian data collectors went to the bases to obtain the data, where they talked about the confidentiality of the data and assured personnel that no military personnel at their base would have access to the questionnaires or information; and (3) we used well-trained data collectors who we believe gained the trust of the respondents. Informal data from pilot test focus groups suggest that respondents were accepting of these procedures and were willing to be forthcoming in their responses.

Fifth, data are based on self-report and may be subject to memory errors. However, because of the large number of respondents, our use of sampling weights, the anonymity of the survey, and the consistency of estimates across several HRB Survey iterations, we nevertheless believe the extent of potential bias to be small.

Policy Implications for Family Support

Single personnel are generally at higher risk for substance use and mental health problems; unaccompanied married personnel are often at a similar risk. Being together with one's spouse appears to be an important resiliency factor. Therefore, to maintain a healthy and ready force, married couples should be encouraged to move together for tours and deployments whenever feasible.

Two key policy questions arise from these findings:

1. Are military programs addressing the needs of their intended audiences, such as deployment-related issues experienced by single service members?
2. Are programs established for single service members also salient to married service members who are not accompanied by their spouses?

Support Programs for Singles: Current programs aim to respond to the recreational needs of single service members, who make up a significant portion of military personnel (e.g., 35% of the Army). Currently, existing programs sponsored by Morale, Welfare, and Recreation (MWR) include components aimed at facilitating recreation and leisure, quality of life, health and wellness, well-being, community service, and career development. Given the findings reported here, programs should also be geared toward single service members and married service members not deployed with their spouses. There are already programs designed to support single service members, including:

- Army Better Opportunities for Single Soldiers (BOSS) Program
- Navy Single Sailor Program
- Marine Corps Single Marine Program
- Air Force Airman and Family Readiness Centers

Services like MWR and those listed above need to focus attention on issues unique to single and married unaccompanied service members. To facilitate this focus, it is important to consider taking the following actions:

- Determine whether there are sufficient activities that promote healthy lifestyle in a non-alcohol/tobacco use environment.
- Identify drivers of substance use, stress, and mental health issues among active duty service members by family status (e.g., conduct more in-depth analyses that examine impact of deployment and other correlates, such as type of deployment, sex, service, children).
- Identify additional factors associated with substance use, stress, and mental health issues, in conjunction with family status.
- Examine variables associated with deployment, such as length of deployment, number of deployments, and combat exposure (some of this information will be available in the 2008 DoD Health Related Behavior Survey).

If these issues are more fully considered by policy makers, MWR, and other service member support organizations, then hopefully the gap between single personnel

and married personnel seen here will begin to close, leading both to healthier service members and a healthier military. Combat readiness, job performance, and current and future medical costs will all be positively affected.

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Chapter 17
Single Military Mothers in the New Millennium: Stresses, Supports, and Effects of Deployment

Michelle L. Kelley, Ashley N. Doane, and Matthew R. Pearson

Abstract The present study examined Navy mothers' reports about their own and their children's psychological symptoms. Navy mothers ($n=154$) were divided into a deployment group ($n=71$, defined as facing a military-induced separation within the next 60 days) and a nondeploying control group ($n=83$) who were not expecting deployment in the next year and a nondeploying control group. They were assessed twice (prior to and after deployment and at similar times for the nondeploying group). A path analytic model was tested separately for single and married Navy mothers. For both single and married Navy mothers, maternal psychosocial adjustment at the initial assessment was associated with maternal adjustment at the final assessment. In addition, children's emotional and behavioral functioning at the initial assessment predicted children's adjustment at the final assessment. For single Navy mothers, experiencing more psychological symptomatology predicted children's internalizing and externalizing behavior at the final assessment; however, this relationship was not present for married Navy mothers and their children.

As the result of the Global War on Terrorism, military service members are exposed to back-to-back deployments unprecedented in recent history. The growing awareness of the challenges faced by service members and their families led to a working group convened by the Department of Veterans Affairs (VA) Office of Research and Development, the National Institute of Mental Health (NIMH), and the U.S. Army Medical Research and Materiel Command to inform research on deployment and its impact on mental health. This agenda-setting report called for research on service member well-being, and the impact of deployment on mental health of partners and children (Department of Veterans Affairs, 2006). In addition, the group called for research on family relationships and the impact of deployment-related mental disorders on spouses and children. This call represents a fundamental shift in thinking about the effects of deployment on the military member to recognizing

M.L. Kelley (✉)
Department of Psychology, Old Dominion University, Norfolk, VA, 23529-0267, USA
e-mail: mkelley@odu.edu

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that deployment is a family issue with effects on all family members. Because the military is the second largest employer in the United States, with over 1.4 million Active Component members (Department of Defense, 2009) and over 1.1 million Reserve Component and National Guard personnel (U.S. Census Bureau, 2009), the importance of the effects of deployment on military members and their families cannot be understated.

Changes in the Military Family Unit

The composition of the military has shifted rapidly such that Active Component service members have greater family demands than in the past. Since the inception of the all-volunteer force, the mean age of the average service member has steadily increased. Currently, the average Active Component member is 28 years of age, with almost half between 22 and 30 years of age (Department of Defense, 2008). Because the typical service member is older than in the past, they are more likely to have families. As of September 2008, over half of the enlisted force (52%) and the majority of officers (70%) of officers were married (Defense Manpower Data Center, 2008). Currently, there are more than 1.85 million children with one or more parents in the military (Adler-Baeder, Pittman, & Taylor, 2006).

Paralleling changes in the larger society, the number of non-traditional military families (i.e., dual-career couples, families in which the woman is the sole military member, single military parents, and so forth) has also risen. Women comprise 14.2% of all Active Component personnel, 15.3% of the Reserve Component, and 17% of the National Guard. These statistics translate to over 200,000 Active Component women and 160,000 women who serve in the Reserve Component and the National Guard (U.S. Census Bureau, 2009).

Because there are more men than women in the military, there are more single military fathers than single military mothers; however, the proportion of military personnel who are single mothers is greater than the proportion of single military fathers (approximately 2.8 to 1; Department of Defense, 2001). Specifically, in 2003, there were 86,434 single enlisted Active Component parents in the U.S. Armed Forces; of these, over 23,000 were single mothers (Crary, 2003). As of May 2008, there were over 5,000 single enlisted Navy mothers (Bureau of Naval Personnel, 2009). Thus, single enlisted Navy mothers comprise nearly one-quarter of single military mothers.

The greater proportion of single military women may reflect that military women are less likely to be married than their male counterparts. As of 2005, 56.1% of military men and 46% of military women were married (Adler-Baeder et al., 2006). Related to this point, Angrist and Johnson (2000) found that military men are less likely to get divorced while serving in the military, whereas military women are more likely to get divorced relative to civilian women.

In fact, military women are two to three times more likely to be divorced or remarried or to not remarry than civilian women (Adler-Baeder et al., 2006). This difference may in part reflect the lower average age at first marriage for military personnel as compared to the civilian population (Martin & McClure, 2000), and that younger service members, who in general have lower rank and pay, have greater economic stress (Schultz & Rosenfield, 2009). The number of single military parents may also reflect the growing trend in the United States in which nearly 40% of children are born to single mothers (U.S. Department of Health and Human Services, 2008). Moreover, approximately 85% of children in the United States who live in single parent households live with their biological mothers (U.S. Census Bureau, 2008). In addition to the changes in family structure that have taken place in the United States within the last three decades, the military provides many institutional supports for parenthood that include a housing allowance, coverage of all medical expenses, and low-cost childcare.

The Effects of Deployment on Military Members and Their Families

Although military families experience many of the same challenges as civilian families (e.g., job strain, time pressure), military employment results in a unique set of challenges that may stress the family system. Military service requires frequent transfers to sometimes undesired locations, uncertainty about future assignments, varying and uncertain schedules, long hours, strenuous training and physically demanding jobs, temporary separations for training, and fears for the military member's safety (see Burrell, Adams, Durand, & Castro, 2006, for a review). Although separation can occur for many reasons including short exercises for training or to prepare for lengthy missions, perhaps the most documented challenge to military family life is deployment. For Navy members, military service requires alternating between ship and shore assignments. Ship assignment entails frequent deployments.

Although previous research has examined the effects of deployment on military men and their families, the experiences of female service members have been largely overshadowed. The lack of attention to female service members may be because they are a smaller proportion of service members. Our own work has focused on the effects of deployment on Navy personnel and their families with a particular emphasis on enlisted Navy mothers (Kelley, 1994a, 1994b, 2002, 2006; Kelley, Herzog-Simmer, & Harris, 1994; Kelley, Hock, Bonney, et al., 2001; Kelley, Hock, Smith, et al., 2001; Kelley et al., 2002). In one of the few studies to examine Navy mothers, Godwin (1996) documented that deployment is emotionally straining for Navy mothers who must put their jobs ahead of spending time with their children. In a longitudinal study of Navy mothers (half of the women were anticipating deployment at the initial assessment and were interviewed at

predeployment and postdeployment; half were on shore duty and were interviewed at similar intervals), single women anticipating deployment reported the highest levels of depressive symptoms. In fact, for single women in the deployment condition, the mean depressive symptomology score was slightly *above* the cut-off indicative of depression. The mean number of depressive symptoms reported by single women in the deployment condition was significantly higher than for married women in the nondeploying control condition. With respect to anxiety, single women in the deployment condition and married women in the nondeploying comparison group reported the highest levels of anxiety (Kelley et al., 2002). Thus, relative to other military mothers, deployment may be especially difficult emotionally for single Navy mothers.

Examination of the children of Navy mothers has shown that compared to children of nondeploying Navy mothers, children of deployed Navy mothers exhibit higher levels of internalizing behavior (i.e., sadness and worrying) as reported by both their mothers and their childcare providers. Although deploying Navy mothers did not report higher levels of externalizing behavior (i.e., aggression, noncompliance) in their children than nondeploying Navy mothers, childcare providers of deploying children did report significantly higher levels of externalizing behavior among children of deploying mothers as compared to childcare providers of nondeploying Navy mothers. Thus, children of deploying mothers may be expected to exhibit more emotional and behavioral symptoms than children of nondeploying mothers; however, it is important to recognize that the majority of children with deploying mothers had mean internalizing and externalizing behavior scores within the normal range (i.e., *t* scores on the CBCI of 59 or below; Kelley, Hock, Smith, et al., 2001). Thus, similar to conclusions made in a study of children of deployed soldiers (Jensen, Martin, & Watanabe, 1996), our research did not suggest greater pathology in children of deployed Navy mothers (Kelley, Hock, Smith, et al., 2001). However, we should caution that reader that additional research is needed to replicate these findings.

Theoretical Explanations and Empirical Research

There are a number of theoretical explanations that may account for these previous findings. Role theory, proposed by Biddle (1986), contends that individuals' transition in and out of roles throughout their lives. Specifically, role theories are organized around the belief that individuals have multiple social roles, each of which has specific normative behaviors and attitudes. For many military women, their lives involve the dual role of military member and mother. At times, these roles and the normative behaviors and attitudes surrounding these roles are mutually exclusive. Related to this point, Moen (1992) contends that the degree to which work and family roles benefit women depends on many factors in women's lives. For instance, the conditions of work and family roles, the number and age of children, and the degree to which women see themselves as committed to each role are

important for psychological health. Because military service requires a high level of commitment, the degree to which Navy mothers are invested in the role of military service member may have important implications for the psychological well-being of these women. Specifically, perceiving that they are more committed to a military career may reduce any cognitive dissonance or conflict feelings that women have regarding short and extended separations from their children as well as other demands of a military career. Alternatively, women who derive a greater degree of self-concept from motherhood may find the inherent demands of the Navy incompatible and choose to leave military service (see Kelley, Hock, Bonney, et al., 2001b).

Risk and resiliency may also play an important role for Navy mothers and their children (see Palmer, 2008). Children of deployed parents are at greater risk for developing internalizing symptoms (i.e., sadness, worrying; Jensen, Grogan, Xenakis, & Bain, 1989; Jensen et al., 1996; Kelley, Hock, Smith, et al., 2001; Medway, Davis, Cafferty, Chappell, & O'Hearn, 1995) and academic and aggressive behaviors (Rosen, Teitelbaum, & Westhuis, 1993a; Schwab et al., 1995); however, these symptoms usually do not reach pathological levels. Although married Navy mothers presumably leave their children in the care of their husbands during deployment, the degree to which deployment takes a toll on at-home civilian fathers is not known.

In contrast to married service mothers who are often able to leave their children with their partner during deployment, our own work with Navy mothers (Kelley, Hock, Smith, et al., 2001; Kelley et al., 2002) and research on women in the Air Force (Pierce, Vinokur, & Buck, 1998) has shown that when military women deploy, their children often go to live with new caregivers in other cities and states. Thus, for many children, their mothers' deployment means a new primary caregiver, moving to another area of the country, and leaving their homes, neighborhoods, childcare providers, and schools. Moreover, because their children are often young, many children will not be familiar with their new caregivers. Although deployment often results in the ability of fathers and extended family members to develop closer relationships to these children, women have traditionally borne responsibility for child care, thus, leaving young children may be especially complicated for these young mothers.

Another theory that may have particular utility for military families is family systems theory. Family systems theory posits that families function as a working system in which members are interdependent (Broderick, 1993; Minuchin, 1974). From a family systems perspective, rather than individuals, military families would be viewed as a unit. A key construct in family systems theory is homeostasis, which is the tendency for family members to continue behaving in the same way once the behavior is established.

Although in nearly all families, members rely on one another, many aspects of a military career require pressures to meet the inherent needs of the larger military mission. These include frequent moves, tailoring the spouse's work and career activities around the service member's schedule, and reliance on spouses, ex-spouses, and extended family members during deployment. These challenges result

in particularly crucial and numerous interconnections in military families. Therefore, family systems theory provides rich potential from which to view military families. However, recent reports have acknowledged the limited empirical research on military families and called for studies that examine the impact of deployment on the mental and physical health of partners and children (e.g., American Psychological Association, 2007). We believe that considering the effects of deployment on military children from a family systems conceptualization may be a useful framework for future investigations.

In fact, some research has shown that military member and spouse functioning appear related. For instance, among soldiers surveyed before and after deployment, deployment to Iraq was associated with soldiers' decreased marital satisfaction, increased intention to divorce, and increased self-reported partner abuse, particularly at the 12-month follow-up to deployment assessment. In addition, spouses' rates of depression and generalized anxiety disorder were similar to that of soldiers (Hoge, Castro, & Eaton, 2006). Another study by this same research group showed that about 17% of care-seeking spouses of soldiers involved in combat deployments reported experiencing stress and/or emotional problems. Importantly, soldiers' spouses had similar levels of mental health problems as their combat-exposed husbands (Eaton et al., 2008).

In their pioneering work on partners and parents of Dutch peacekeepers, Dirkzwager, Bramsen, Adèr, and van der Ploeg (2005) examined the effects of PTSD on the family members of Dutch peacekeepers using Family Systems Theory as an overarching framework. In comparison to partners of peacekeepers without PTSD, partners of those with PTSD reported more sleeping and somatic problems, more negative social support, and more negative marital relationships. They concluded that living with a partner that has PTSD may create risk for PTSD among spouses. Another study from this same research team revealed that 50 years after WWII, 18% of men and 11% of women had a likely diagnosis of PTSD related to their exposure to WWII; however, spousal PTSD symptoms significantly added to the prediction of the participant's own PTSD symptoms after controlling for each partner's exposure to WWII (Bramsen, van der Ploeg, & Twisk, 2002). Importantly, Tarrier, Sommerfield, and Pilgrim (1999) showed that stressful family environments were negatively associated with PTSD treatment outcomes.

Other research has demonstrated the importance that the mental health of the at-home parent (usually the mother) has in determining child adjustment (Jensen et al., 1996; Rosen, Teitelbaum, & Westhuis, 1993b). For instance, Jensen et al. (1996) found children of deployed soldiers and their nondeployed parents exhibited elevated symptoms of depression even after controlling for predeployment levels of depression, children's age, and parents' military rank. The parent–child relationship demonstrated by Jensen et al. is not surprising given that the civilian research contains a long history of research demonstrating that maternal depression is linked to children's problem behavior (see Cummings, Keller, & Davies, 2005; see also Shaw, Connell, Dishion, Wilson, & Gardner, 2009) and that mothers' psychological distress covaries significantly with emotional and behavioral problems in children (e.g., Forgatch, Patterson, & Skinner, 1988; Patterson, 1999).

Collectively these studies suggest the importance of thinking about how deployment may affect Navy mothers and their family members' psychosocial health. Thus, the present study reports on data collected from Navy mothers about their own psychological symptoms and that of their children. Navy mothers and their children were followed longitudinally and assessed twice: prior to and after deployment and at similar times for the nondeploying comparison group. This assessment made it possible to examine whether deployment condition, marital status, and Navy mothers' psychosocial functioning and children's emotional and behavioral functioning at the initial assessment were associated with Navy mothers' and children's well-being at the final assessment.

We hypothesized that deployment would be associated with maternal psychosocial functioning, such that deployment would have a negative effect on Navy mothers' psychosocial functioning at the predeployment assessment. However, given that deployment may be more difficult for single mothers, a decision was made to examine single and married women separately. Because time in the military may be associated with adjustment, we also examined whether time in the Navy would be associated with Navy mothers' psychosocial functioning at the initial assessment. We hypothesized that longer time in the Navy would be associated with fewer symptoms of psychological distress. This hypothesis was based on previous research examining two PATRIOT battalions that found in both units, younger and lower-ranking soldiers report lower family adjustment during deployment than older and more senior soldiers (Rohall, Segal, & Segal, 1999). We also hypothesized that maternal and child functioning at the initial assessment would be associated, and that maternal and child psychosocial adjustment at the initial assessment would predict maternal and child functioning at the final assessment.

Method

Recruitment

A commander who served as the point of command (POC) identified ships with mixed gender crews scheduled to deploy and area commands. A senior officer on each of these ships was contacted by the POC or the first author and informed of the study. Prior to scheduled visits by the first author, administrative office crewmembers generated a list of female personnel with children. Selected personnel attended a briefing in which the first author give the rationale for the study (i.e., to examine the effects of shipboard assignment on female personnel and their families), outlined criteria for participation, and answered study-related questions. Nondeploying women were also recruited via an advertisement placed in a local Navy newspaper or through a letter sent home with Active Component Navy mothers with a child who attended a military daycare center. Women who were recruited from the advertisement or the letter called the first author directly.

The full sample of Navy mothers ($n=154$) included a deployment group ($n=71$, defined as facing a military-induced separation within the next 60 days) and a nondeploying control group ($n=83$) who were not expecting deployment in the next year. Women in the deployment group were recruited from one of five destroyers, two carriers, two amphibious ships, and a salvage ship.

Women in the nondeploying group were assigned to shore duty and were not anticipating deployment in the next 12 months. Most women were recruited from area shore commands, whereas other women were recruited from the newspaper advertisement or from the letter that was sent home with children attending the childcare center.

The mean age of the Navy mothers was 27.2 years (SD = 5.1 years; range = 20–47 years). Forty-seven percent ($n=72$) were married and 53% ($n=82$) were single. Thirty-six percent ($n=61$) held a high school degree or GED, 48% ($n=74$) had attended college, and 5% ($n=8$) held a bachelor's degree.

Fifty-three percent of the Navy mothers were White, 36% were African American, 4% were Hispanic, 1% was Pacific Islander, and 6% reported racial/ethnic identity other than one of these categories. The length of Navy service ranged from 5 months to 19.6 years ($M=7.2$ years; SD = 4.2 years). Most participants were E-4 or E-5 (range = E-1–E-8). Rank was representative of all Active Component enlisted Navy women (Bureau of Naval Personnel, 2009).

Most women had one child (92 of 154 = 59.7%); however, women with more than one child were asked to answer the questions with their youngest child in mind. At the time of the initial assessment, the mean age of the target child was 3.0 years (SD = 1.7 years; range = 6 months to 8.0 years). Seventy-seven percent of the target children were 4 years of age or younger. There were 79 girls and 74 boys.

Design

Single and married women were followed longitudinally and assessed twice: prior to and after deployment and at similar times for the nondeploying (i.e., shore duty) comparison group. This assessment made it possible to examine the ways in which condition was associated with maternal psychological adjustment and child functioning and the effects of psychological functioning at Time 1 on psychological functioning at Time 2. Data collection took place between 1996 and 1999.

Measures

Center for Epidemiologic Studies-Depression Scale (CES-D). The CES-D (Radloff, 1977) is a self-report instrument that assesses how often the respondent has felt or behaved according to each of 20 items in the previous week (e.g., "I felt depressed"). Items are scored on a 4-point scale. The range of scores is 0–60, with higher scores indicating greater depressive mood; a score of 16 is indicative of clinical levels of

depression. The CES-D has been widely used in assessing depressive symptoms in nonclinical samples of mothers (e.g., Hock, Schirtzinger, & Lutz, 1992). The CES-D has good reliability, it is appropriate for individuals from diverse backgrounds, and discriminates well between clinical subgroups (e.g., Radloff, 1977).

Perceived Stress Scale (PSS). The PSS (Cohen, Kamarck, & Mermelstein, 1983) is a 14-item questionnaire that assesses the degree to which respondents feel their lives are unpredictable, uncontrollable, and overwhelming (e.g., "In the last month, how often have you felt that you dealt successfully with irritating life hassles?" "In the last month, how often have you felt difficulties were piling up so high that you could not overcome them?"). The response scale is from: "never" (0) to "very often" (5). Internal consistency was 0.81 at the initial assessment and 0.88 at the final assessment. Previous research has established the validity of the PSS (see Cohen & Williamson, 1988).

Anxiety Questionnaire. Respondents completed a 14-item self-report questionnaire (Kremen, 1990), that assesses current feelings of anxiety (e.g., "I am often nervous for no reason." "I often find myself worrying about something."). The response scale is from: "never" (1) to "always" (5). Alphas were 0.85 and 0.88 at the initial and final assessments, respectively.

Child Behavior Checklist. The Child Behavioral Checklist (CBCL 4-18; Achenbach, 1991) and Child Behavior Checklist (CBCL 2-3) are widely used and comprehensive parent rating scales that yield a broadband score for children's Internalizing (e.g., cries a lot, worries) and Externalizing (e.g., argues a lot, disobedience at home) behavior. Parents completed the CBCL 4-18 or CBCL 2-3 depending on the age of the child. Both have high internal consistency, test–retest reliability, and concurrent validity with other measures of child problem behaviors (Achenbach, 1992; Achenbach, Edelbrock, & Howells, 1987; Dutra, Campbell, & Weston, 2004). *T* scores, which correct for child age and gender, were used in the analyses reported herein.

To provide multiple raters of children's behavior, childcare providers of children of Navy mothers completed the CBCL. On average, childcare providers had cared for children 12.5 months (SD = 12.7 months; range = less than 1 month to 5.0 years) at the initial assessment. Childcare providers included: babysitters (48%), childcare centers (34%), or relatives (18%). To examine the relationship between Navy mothers and childcare providers' reports of children's behavior, we correlated Navy mothers' *T* scores on the internalizing dimension on the CBCL at initial and final assessment with that of their babysitters, and Navy mothers' *T* scores on the externalizing dimension of the CBCL at the initial and final assessment to that of their babysitters. The mothers' reports of the children's externalized behaviors were significantly correlated with their babysitters' reports of the children's externalized behaviors both at predeployment ($r = 0.19$) and postdeployment ($r = 0.22$). However, mothers' and babysitters' reports of children's internalized behavior were not significantly related at predeployment or at postdeployment. Given the long history of research that has demonstrated the relationship between maternal functioning and children's well-being and behavioral and emotional adjustment (e.g., Cummings et al., 2005; Leschied, Chiodo, Whitehead, & Hurley, 2005; cf. Wachs, Black, & Engle, 2009), a decision was made to include mothers' CBCL scores in the analyses that follow.

Demographic Questionnaire. The demographic questionnaire assessed the participant's rank, age, years in the military in months, rate, and number and ages of children.

Results

From the total depression (i.e., CES-D), stress (i.e., PSS), and anxiety (i.e., Kremen) questionnaire scores, a composite score was created that reflected maternal psychological adjustment. Total scores for each of these three scales were first converted to *z*-scores. Next, the *z*-scores were averaged for each individual to create an overall psychological adjustment score, with higher *z*-scores reflecting more depressive symptoms, more stress, and more symptoms of anxiety. In addition, mothers' reports of their children's internalized and externalized scores were highly correlated at both predeployment ($r = 0.74$) and postdeployment ($r = 0.77$); therefore, a composite score for children's internalized and externalized (combined) was created. This score reflected the averaged *T* scores for Internalizing and Externalizing behavior, with higher scores reflecting more emotional and behavioral symptoms. Composite scores are used in the analyses instead of fitting a measurement model because of the small sample size.

A path analytic model was tested separately for non-married (i.e., single, divorced, widowed, living together, or separated) and married mothers (see Fig. 17.1). Months in the Navy and deployment condition (0 = shore duty group; 1 = deployment group) were expected to correlate with each other and both were expected to predict Navy mothers' psychological adjustment (i.e., depression, perceived stress, and anxiety) at predeployment. Also, a cross-lagged analysis was used to test if the mothers' psychological adjustment (at predeployment for the deployment condition and at initial assessment for the shore duty sample) predicted their children's internalized and externalized behaviors (at postdeployment and at similar intervals for shore duty women). In addition, it was predicted that mothers' psychological adjustment at predeployment would predict their own psychological adjustment at postdeployment and that the children's internalized and externalized behaviors at predeployment would predict their own internalized and externalized behaviors at postdeployment. Furthermore, the mothers' psychological adjustment was expected to correlate with their children's internalized and externalized behavior at both predeployment and postdeployment. Additional correlations among exogenous variables (deployment condition and children's internalized and externalized behaviors at predeployment, as well as months in the Navy and children's internalized and externalized behaviors at predeployment) were tested but not included in Fig. 17.1 for simplicity, as these correlations were not significant for either non-married or married mothers. This model yielded excellent fit with the data, $\chi^2(10) = 8.01$, *ns*; CFI = 1.00, RMSEA = 0.00, SRMR = 0.05.

For non-married mothers, the cross-lagged analysis revealed that the mothers' psychological adjustment at predeployment significantly predicted their children's internalized and externalized behaviors at postdeployment. Specifically, higher psychological adjustment scores (which reflected poorer psychological adjustment)

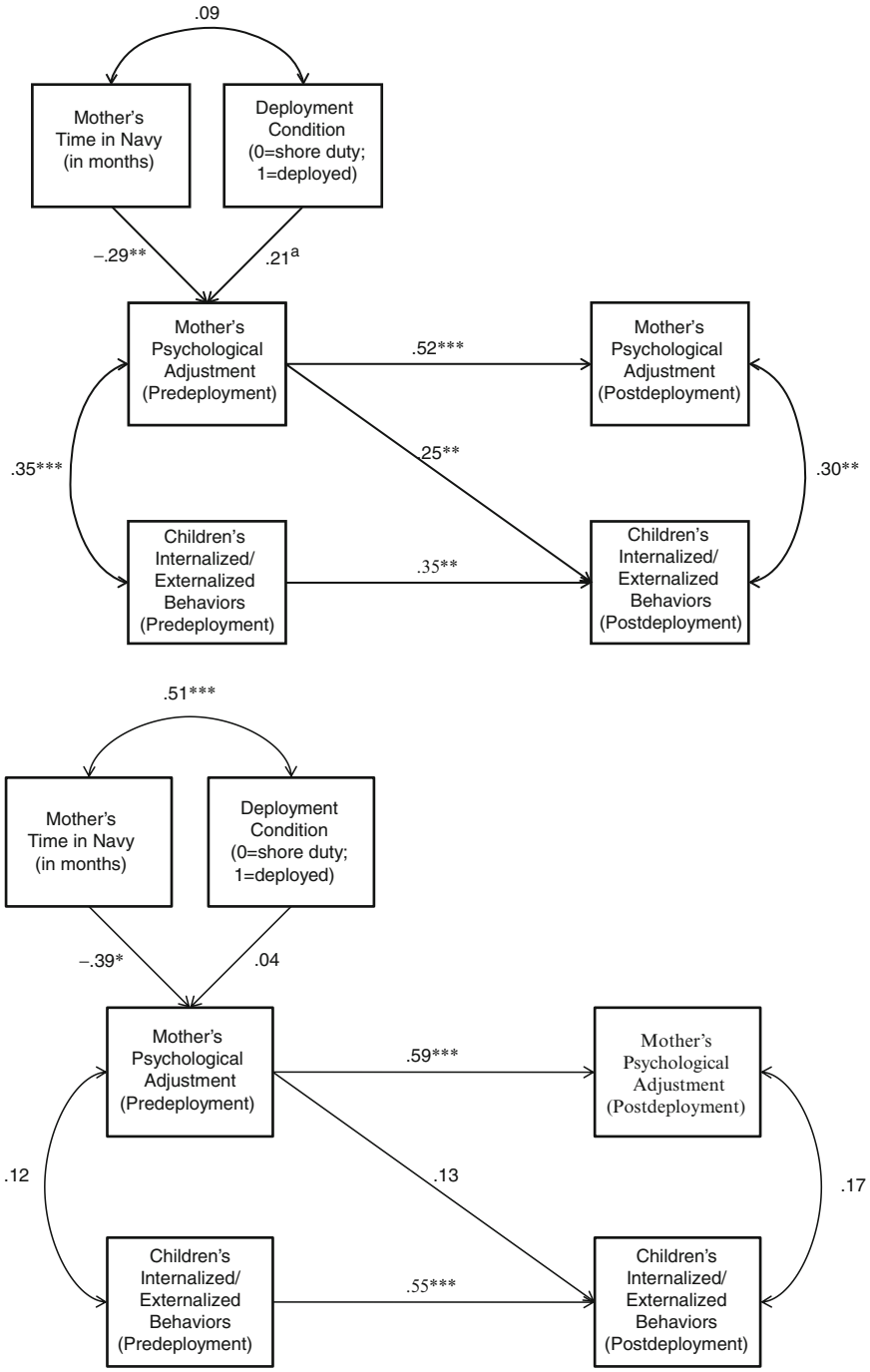

Fig. 17.1 Prediction of the family systems model in relation to navy mother and child outcomes for non-married mothers (*top*) and married mothers (*bottom*). *Note*. For participants in the deployment condition, the first assessment was at predeployment and the final assessment was at postdeployment; for participants in the shore duty group, the assessments were at the same interval as that of the deployment condition. [a]$p = 0.065$, [*]$p < 0.05$, [**]$p < 0.01$, [***]$p < 0.001$

for mothers were associated with higher internalized and externalized scores for their children. As expected, the mothers' psychological adjustment at predeployment predicted their psychological adjustment at postdeployment, and children's internalized/externalized behaviors at predeployment predicted their internalized/externalized behaviors at postdeployment. In addition, there was a significant correlation between mothers' psychological adjustment and their children's internalized and externalized behaviors at predeployment. Moreover, there was a significant correlation between mothers' psychological adjustment and their children's internalized and externalized behaviors at postdeployment. When controlling for deployment condition, months in the Navy significantly predicted psychological adjustment at predeployment, in that more time in the Navy was related to lower psychological adjustment scores (i.e., better psychological adjustment). Also, the deployment condition prediction of psychological adjustment when controlling for time in the Navy was marginally significant ($p = 0.065$), such that deployed mothers had higher psychological adjustment scores (poorer psychological adjustment) than the shore duty mothers. However, months in the Navy and deployment condition were not significantly correlated.

For married mothers, unlike with the non-married mothers, the mothers' psychological adjustment at predeployment did not significantly predict their children's internalized and externalized behaviors at postdeployment. Also different from the non-married mothers, the correlation between mothers' psychological adjustment and their children's internalized and externalized behaviors at predeployment was not significant. Similarly, there was not a significant correlation between mothers' psychological adjustment and their children's internalized and externalized behaviors at postdeployment. Furthermore, the deployment condition prediction of psychological adjustment when controlling for time in the Navy was not significant. Although months in the Navy and deployment condition were not significantly correlated for non-married mothers, for married mothers, there was a significant correlation between months in the Navy and deployment condition. The remaining results were the same for both non-married mothers and married mothers. As anticipated, the mothers' psychological adjustment at predeployment predicted their psychological adjustment at postdeployment, and children's internalized/externalized behaviors at predeployment predicted their internalized/externalized behaviors at postdeployment. Also, when controlling for deployment condition, months in the Navy significantly predicted psychological adjustment at predeployment, in that more time in the Navy was related to lower psychological adjustment scores (i.e., better psychological adjustment).

Discussion

These results support a long history of research on civilian mothers and their children that show that parent and child functioning are related and consistent in functioning over time. Specifically, for both single and married Navy mothers, maternal adjustment

at the initial assessment was associated with maternal psychosocial adjustment at the final assessment and children's emotional and behavioral functioning at the initial assessment predicted children's adjustment at the final assessment.

For single Navy mothers, maternal psychosocial adjustment at the initial assessment predicted children's emotional and behavioral functioning at the final assessment. This finding parallels previous research with civilians that has shown that maternal depression is linked to children's problem behavior (see Cummings et al., 2005; see also Shaw et al., 2009; Wachs et al., 2009) and that mothers' psychological distress covaries significantly with emotional and behavioral problems in children (e.g., Forgatch et al., 1988; Patterson, 1999). In contrast, for married mothers, maternal psychological adjustment at the initial assessment was not associated with mothers' reports of children's emotional and behavioral symptoms. The different pattern of relationships for the two groups suggests that for single mothers and their children, maternal psychological adjustment may be more closely related to children's psychological adjustment. Given that maternal functioning predicted child functioning in single-parent families, these results suggest that if single mothers are experiencing poor psychological adjustment, their children may be at greater risk for psychological symptomatology. In contrast, for children of married mothers, it is possible that fathers' psychological well-being and other aspects of the family environment (e.g., dyadic relationships) may contribute to children's emotional and behavioral symptoms.

It is difficult to know whether maternal reports of children's behavior were objective. It is possible that mothers' own adjustment may have influenced their ratings of their children; however, it is important to note that although single mothers' ratings of psychological symptoms at the initial assessment predicted their reports of children's emotional and behavioral symptoms at the second assessment, this relationship was not present for married mothers. In addition, we found a small but significant correlation between childcare providers' reports of children's externalizing symptoms and mothers' reports of their children's externalizing symptoms. However, we did not find an association between childcare providers' reports of children's internalizing symptoms and mothers' reports of children's internalizing symptoms. The discrepancy between childcare providers and mothers' reports of children's internalizing behavior mirrors previous research. Glaser, Kronsnoble, and Forkner (1997) found mothers' and teachers' ratings on the internalizing dimension of the CBCL were not significantly correlated; however, mothers' and teachers' ratings of children's externalizing behaviors were significantly correlated. These results also correspond to findings reported by Stanger and Lewis (1993) who found the lowest agreement among mothers, fathers, teachers, and children's ratings of children's internalizing and externalizing behaviors occurred for rater pairs involving teachers on internalizing behaviors. The difference between childcare providers and mothers' ratings of children's internalizing behavior is not surprising given the nature of the difference between behaviors that are acted out (i.e., externalizing) as opposed to behaviors that are directed toward one's self (i.e., internalizing). Moreover, the young age of the children makes assessing internalizing symptoms (i.e., sadness, worrying) inherently difficult. In addition, the

lack of correspondence between mothers' and childcare providers' reports of internalizing behavior may reflect that childcare providers are rating children's behavior in a daycare or home childcare setting, whereas mothers are rating children's behavior in other settings.

As expected, for both single and married mothers, time in the Navy was associated with better psychosocial health. Kelley, Hock, Bonney, et al. (2001) found that women who reported greater satisfaction, commitment to a Navy career, and increased integration into the Navy (for women who deployed), were more likely to plan to reenlist. Thus, it appears that greater time in the Navy is associated with greater satisfaction, commitment to a Navy career, and increased integration. Price and Kim (1993) found that the length of time in the military was a significant predictor of intention to stay in the military, with the strongest intention to stay among those who had reached the midpoint of a 20-year career. Again, it is plausible that women who find the demands of service unsatisfactory or stressful are likely to leave the service. These results are similar to previous research. For instance, Rohall et al. (1999) found that younger, lower ranking soldiers reported lower family adjustment as compared to older, higher ranking soldiers. Moreover, Jensen et al. (1996) found lower rank was associated with increased depressive symptoms in at-home caretaking parents.

Study Limitations

Although these women appear to represent enlisted Navy women with respect to rank (Bureau of Naval Personnel, 2009), clearly, these findings may not generalize to families of female officers, women from other branches of the military, or families in which the father is the military member. Another concern is the young age of children in the study. Specifically, it is difficult to determine what internalizing behaviors represent problem behaviors in very young children. However, both the CBCL 2/3 (cf. Achenbach, 1992; Achenbach et al., 1987; Koot, Van Den Oord, Verhulst, & Boomsma, 1997) and CBCL 4-18 (Dutra et al., 2004) have good psychometric properties, discriminative power, and predictive ability, and the two-factor second order structure of the CBCL has been demonstrated across numerous studies (e.g., Dutra et al.; Greenbaum & Dedrick, 1998).

In addition, these data were collected prior to September 11, 2001, and may not represent deployment to a war zone or deployment during the current context in which the threat of terrorism has greatly increased. A growing body of literature suggests that war time deployments and their accompanying sequelae may be associated with greater likelihood of clinical levels of mental health problems for both military members and their families (e.g., see Galovski & Lyons, 2004, for a review). For instance, Jensen et al. (1996) found children of parents deployed during Operation Desert Storm exhibited higher levels of depressive symptoms than those whose parents were not deployed. In addition, in contrast to Navy families in which the husband/father was deployed prior to Operation Desert Shield/Desert

Storm, Navy families in which the husband/father was deployed during Operation Desert Shield/Desert Storm did not show the typical pattern of diminishing depression symptoms from pre/mid-deployment to postdeployment (Kelley, 1994a, 1994b). It is also possible that other variables that were not examined in the model such as partner, friend, and command support, satisfaction with childcare arrangements, and so forth (see Tucker & Kelley, 2009) may have an important impact on women's psychological well-being.

Although the study has several important limitations, few longitudinal studies have followed enlisted Navy women throughout a deployment cycle. Moreover, by comparing Navy mothers experiencing deployment to Navy mothers not expecting deployment in the coming year, we had some control over deployment. We believe that this methodology provided a test of the effects of deployment for enlisted Navy women and their children. In addition, the measures exhibited good statistical properties and therefore appear appropriate for use in future studies of this type.

Future Research

Although the U.S. involvement in the Global War on Terrorism, and particularly, OEF and OIF has increased attention to deployment, the vast majority of recent investigations have examined PTSD symptoms among those who experience on-the-ground combat (e.g., Hoge et al., 2004; Milliken, Auchterlonie, & Hoge, 2007; Tanielian et al., 2008; Vogt, Samper, King, King, & Martin, 2008), traumatic brain injury (TBI; Okie, 2005), the relationship between soldier deployment and intimate partner violence (Fonseca et al., 2006; Martin et al., 2007), and mental health treatment needs of military personnel (e.g., Eaton et al., 2008). Although each of the aforementioned topics is of critical importance, it is important to recognize that the United States' ever-increasing involvement in global conflict and peacekeeping missions with no end in the foreseeable future has a critical impact on military families from all branches. Also, as the military diversifies and draws on more women, single parents, dual military couples, and the Reserve Component and National Guard members, it is likely that increasingly complex patterns of family-related responses to stress will surface. Moreover, in order to retain high-quality career personnel and understand how deployment impacts the ability to perform one's job, it is critical to understand the needs of non-traditional military members and their families (i.e., dual-career couples, families in which the woman is the sole military member, single military parents, and so forth).

Related to the issues of combat-related stresses and injuries, despite some attention to child maltreatment during deployments (Gibbs et al., 2008; Martin et al., 2007; McCarroll, Fan, Newby, & Ursano, 2008) and veterans' perceived relationships with their children (Ruscio, Weathers, King, & King, 2002), there has been a conspicuous lack of current research on the adjustment and mental health needs of children whose parents experience combat-related illnesses. Clearly, additional research is needed to understand the clinical needs of children in these

homes. Moreover, without the underlying research to understand how children may be affected by their parent's combat-related stresses and injuries, any attempts at treatment will be largely uninformed.

Although combat exposure and deployment during war may heighten family stress, it is plausible that the increasing tempo of deployments (Adams et al., 2005), lengthier deployments (Adler, Huffman, Bliese, & Castro, 2005; U.S. Fleet Forces Command Public Affairs, 2009, personal communication), and less time between deployments (see Hosek, Kavanagh, & Miller, 2006) that have resulted from the United States' growing number of military commitments may serve to reduce the postdeployment period such that family members begin to think about the next deployment immediately after the military member's return. If it is the case, then the family's ability to return to a steady state may not be possible.

A related issue is deployment extensions. Deployment extensions, which are estimated to affect one-third of military personnel deployed in OIF and OEF, have received little attention despite limited research showing that deployment extensions are stressful (National Military Family Association, 2005), and that deployment extensions have specific but important effects on Army spouses depressive symptoms, household strains, and spouses ability to work outside the home (SteelFisher, Zaslavsky, & Blendon, 2008). More specifically, we know of no research that has examined how deployment extensions are related to the adjustment of children in these homes.

In addition, our own work has focused on sailors who deploy as part of a carrier group, whereas the majority of research on the effects of deployment on soldiers and marines has examined those who deploy as part of a strike force or brigade; however, an increasing number of service members are Individual Augmentees (IAs) who are called from their parent command to serve on the ground in "hot spots" around the world. IAs often deploy for 6–18 months with short breaks (i.e., "Rest and Relaxation") to visit family members during these long deployments. However, how service members and families adjust to the coming and going associated with these short breaks is not well understood.

Clinical Implications

Although there is a growing recognition of the effects of combat-related illnesses on service members, all family members are likely to be affected by a family member's war-related mental or physical injury. Although the military provides predeployment and postdeployment briefings often targeted for first-time deployers and their families, and predeployment and postdeployment assessments that screen for a number of health concerns including PTSD, general health status, and so forth, additional research on single military mothers and their families may allow for a better understanding of mechanisms that lead to positive and negative adjustment and target prevention programs and mental health services to better address the needs of these families. We believe that treatments that target the larger family unit may serve to improve the family environment and have the most potential for

benefiting the military family unit and reducing the development of problems that may emerge if left untreated. Moreover, we also stress the importance of addressing the family's needs that occur prior to the onset of serious problems that may be less malleable to treatment intervention.

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